Potential for multi-mission matchups at candidate sites for Copernicus OC-SVC infrastructure location

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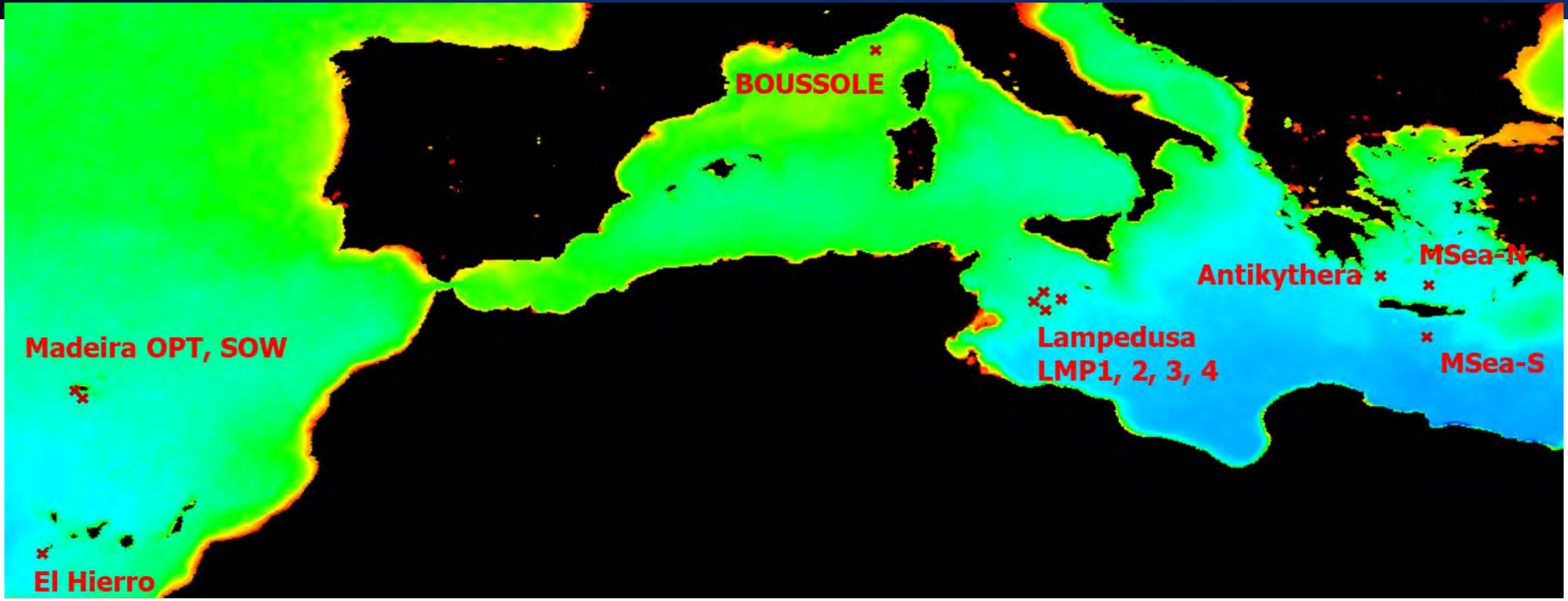
Potential for multi-mission matchups at candidate sites for Copernicus OC-SVC infrastructure location

OC-SVC = Ocean Colour System Vicarious Calibration

1. This presentation is a part of the material requested by the **Expert Review Board** to support a recommendation for the location of the **Copernicus OC-SVC infrastructure**.
2. This presentation shows **statistical analyses of Copernicus candidate OC-SVC locations** to generate matchups with in situ infrastructure measurements
3. The analyses follow **standard community protocols for OC-SVC** matchup screening and vicarious gain generation (also used for Copernicus S3 OLCI)
4. Matchups with **four global Ocean Colour missions** are considered:
   I. Copernicus Sentinel-3 **OLCI-A**,
   II. Copernicus Sentinel-3 **OLCI-B**,
   III. US Aqua MODIS (**MODISA**), and
   IV. US Suomi-NPP/VIIRS (**VSNPP**)
5. The **potential** for OC-SVC matchups is emphasized, as the number of the actual matchups could only be determined if also in situ infrastructure measurements at those sites were available

Copernicus candidate OC-SVC site locations



Extractions

+ **MOBY** (Lanai, Hawaii) → an existing reference OC-SVC site operated by NOAA

Level 2 operational products

OLCI-A [OL_L2M.003.01]: April-2016 to July-2021
OLCI-B [OL_L2M.003.01]: April-2018 to July-2021
MODISA [standard, OBPG-GSFC]: January-2005 to Dec-2009
VSNPP [standard , OBPG-GSFC]: January-2013 to Dec-2020

Lat/lon location of Copernicus candidate OC-SVC sites

StationID	Country	Latitude	Longitude
Antikythera	Greece	36.20	23.55
BOUSSOLE	France	43.37	7.90
El-Hierro	Spain	27.59	-18.16
Lampedusa-LMP1	Italy	35.50	12.80
Lampedusa-LMP2	Italy	35.75	12.35
Lampedusa-LMP3	Italy	35.85	12.73
Lampedusa-LMP4	Italy	35.78	13.07
Madeira-OPT	Portugal	32.62	-17.27
Madeira-SOW	Portugal	32.25	-17.00
MOBY	US	20.82	-157.19
MSEA-N	Greece	35.74	25.07
MSEA-S	Greece	34.00	25.00

An existing reference OC-SVC site operated by NOAA

Extractions

Level 2 operational products

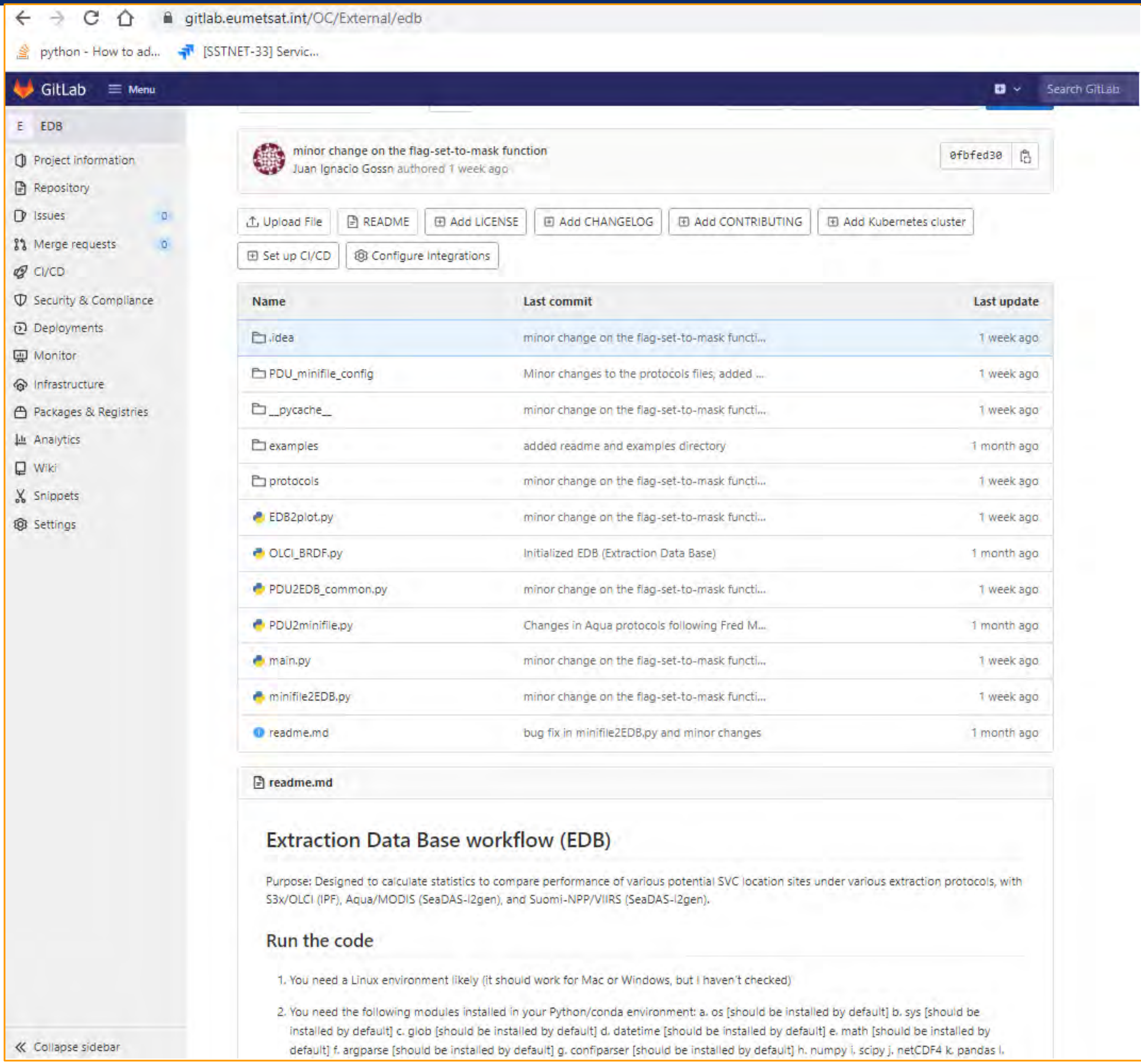
OLCI-A [OL_L2M.003.01]: April-2016 to July-2021
OLCI-B [OL_L2M.003.01]: April-2018 to July-2021
MODISA [standard]: January-2005 to Dec-2009
VSNPP [standard]: January-2013 to Dec-2020

Methods: EDB (Extraction Data Base) workflow

A common workflow was developed for all the L2 products: **EDB (Extraction Data Base)**, repository accessible at EUMETSAT's GitLab space: https://gitlab.eumetsat.int/OC/External/edb (restricted access to Expert Review Board and EUMETSAT staff)

EDB:

1) Locates the extraction window.
2) Produces "minifiles" centred at this window, following pre-existing EUMETSAT formats, but extended to MODIS/VIIRS.
3) Computes and reports all the statistics following a standard common approach among sensors.



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Methods: Extraction and screening criteria → OLCI-A&B

Standard protocol

1) Protocol **"SVC_VIS_PP"**

Description: Post-processing conditions applied over extractions to estimate SVC VIS gains

- Standard community protocol for OC-SVC gain derivation (https://www.eumetsat.int/ocean-colour-system-vicarious-calibration-tool; eumetsat.int/OC-SVC).
- Included in the Copernicus OC-SVC requirements (eumetsat.int/OC-SVC-requirements)

Screening conditions

- **Window size** = 5 × 5
- **SZA** < 70 and **OZA** < 56
- **Flags** = CLOUD, CLOUD_AMBIGUOUS, CLOUD_MARGIN, INVALID, COSMETIC, SATURATED, SUSPECT, HISOLZEN, MEGLINT, HIGHGLINT, SNOW_ICE, WHITECAPS, ANNOT_ABSO_D, ANNOT_MIXR1, ANNOT_TAU06
- **Number of valid pixels** = 25 (100%) [valid: **non-flagged, low zeniths**]
- **CV[ρ_w(412, 443, 490, 510, 560 nm)]** < 15%
- **AOT(865 nm)** < 0.15
- **CHL_{OC4ME}** < 0.2 mg/m^3

SZA = Solar Zenith Angle
OZA = Observation Zenith Angle
CV = Coefficient of Variation = Standard deviation/Mean x 100%
ρ_w(x nm) = Water reflectance at x nm
AOT(x nm) = Aerosol optical thickness at x nm
CHL_x = Chlorophyll concentration, algorithm X

Methods: Extraction and screening criteria → Aqua/MODIS

Standard protocol

1) Protocol **"SVC_VIS_PP"**

Description: Post-processing conditions applied over extractions to estimate SVC VIS gains

- Standard community protocol for OC-SVC gain derivation (https://www.eumetsat.int/ocean-colour-system-vicarious-calibration-tool; eumetsat.int/OC-SVC).
- Included in the Copernicus OC-SVC requirements (eumetsat.int/OC-SVC-requirements)

Screening conditions

- **Window size** = 5 × 5
- **SZA** < 70 and **OZA** < 60
- **Flags** = ATMFAIL, LAND, HIGLINT, HILT, HISATZEN, STRAYLIGHT, CLDICE, COCCOLITH, HISOLZEN, LOWLW, CHLFAIL, NAVWARN, MAXAERITER, CHLWARN, ATMWARN, SEAICE, NAVFAIL, ABSAER, MODGLINT
- **Number of valid pixels** = 25 (100%) [valid: **non-flagged, low zeniths**]
- **CV[ρ_w(412, 443, 488, 531, 547 nm)]** < 15%
- **AOT(869 nm)** < 0.15
- **CHL_{OCI}** < 0.2 mg/m^3

SZA = Solar Zenith Angle
OZA = Observation Zenith Angle
CV = Coefficient of Variation = Standard deviation/Mean x 100%
ρ_w(x nm) = Water reflectance at x nm
AOT(x nm) = Aerosol optical thickness at x nm
CHL_x = Chlorophyll concentration, algorithm X

Methods: Extraction and screening criteria → Suomi-NPP/VIIRS

Standard protocol

1) Protocol **"SVC_VIS_PP"**

Description: Post-processing conditions applied over extractions to estimate SVC VIS gains

- Standard community protocol for OC-SVC gain derivation (https://www.eumetsat.int/ocean-colour-system-vicarious-calibration-tool; eumetsat.int/OC-SVC).
- Included in the Copernicus OC-SVC requirements (eumetsat.int/OC-SVC-requirements)

Screening conditions

- **Window size** = 5 × 5
- **SZA** < 70 and **OZA** < 60
- **Flags** = ATMFAIL, LAND, HIGLINT, HILT, HISATZEN, STRAYLIGHT, CLDICE, COCCOLITH, HISOLZEN, LOWLW, CHLFAIL, NAVWARN, MAXAERITER, CHLWARN, ATMWARN, SEAICE, NAVFAIL, ABSAER, MODGLINT
- **Number of valid pixels** = 25 (100%) [valid: **non-flagged, low zeniths**]
- **CV[ρ_w(410, 443, 486, 551 nm)]** < 15%
- **AOT(862 nm)** < 0.15
- **CHL_{OCI}** < 0.2 mg/m^3

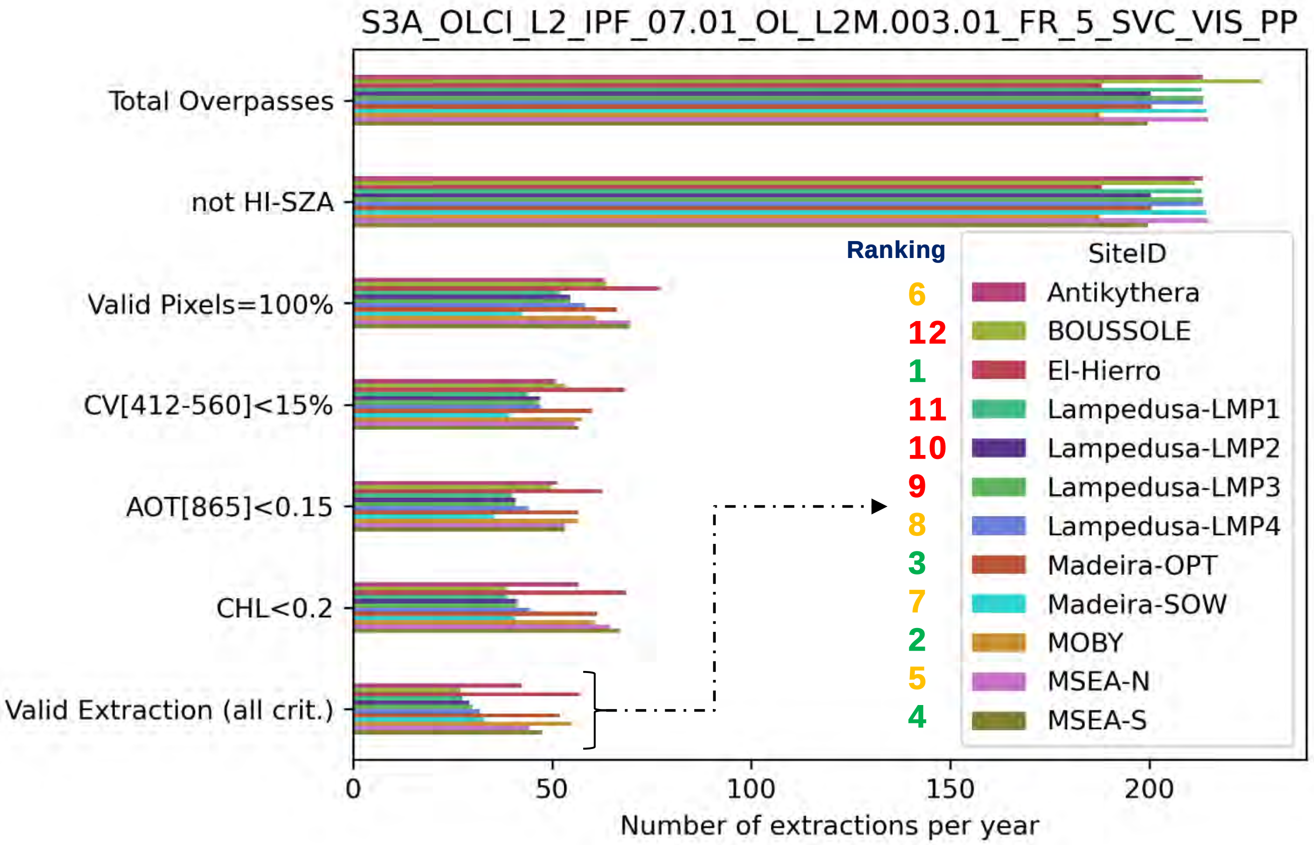
SZA = Solar Zenith Angle
OZA = Observation Zenith Angle
CV = Coefficient of Variation = Standard deviation/Mean x 100%
ρ_w(x nm) = Water reflectance at x nm
AOT(x nm) = Aerosol optical thickness at x nm
CHL_x = Chlorophyll concentration, algorithm X

Results with the standard protocol (SVC_VIS_PP)

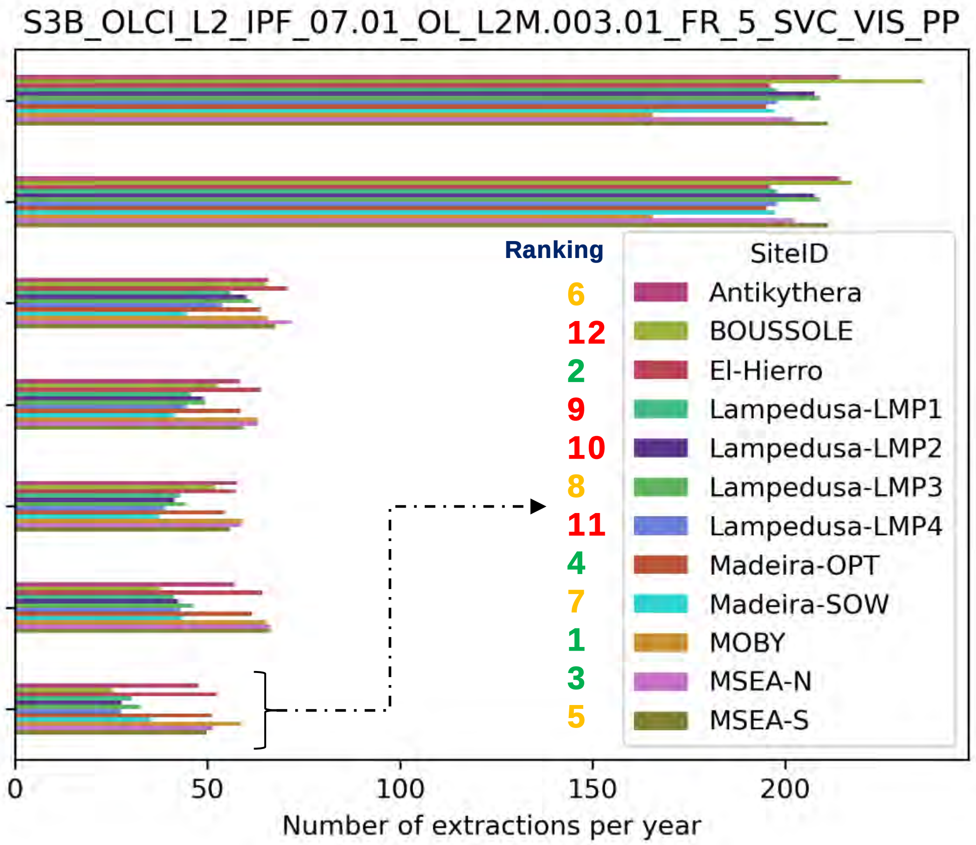
1. Global results (number of valid extractions for each site, rankings)
2. Average number of extractions per month
3. Seasonality of valid extractions

Global results, OLCI-A and OLCI-B

OLCI-A (SVC_VIS_PP)

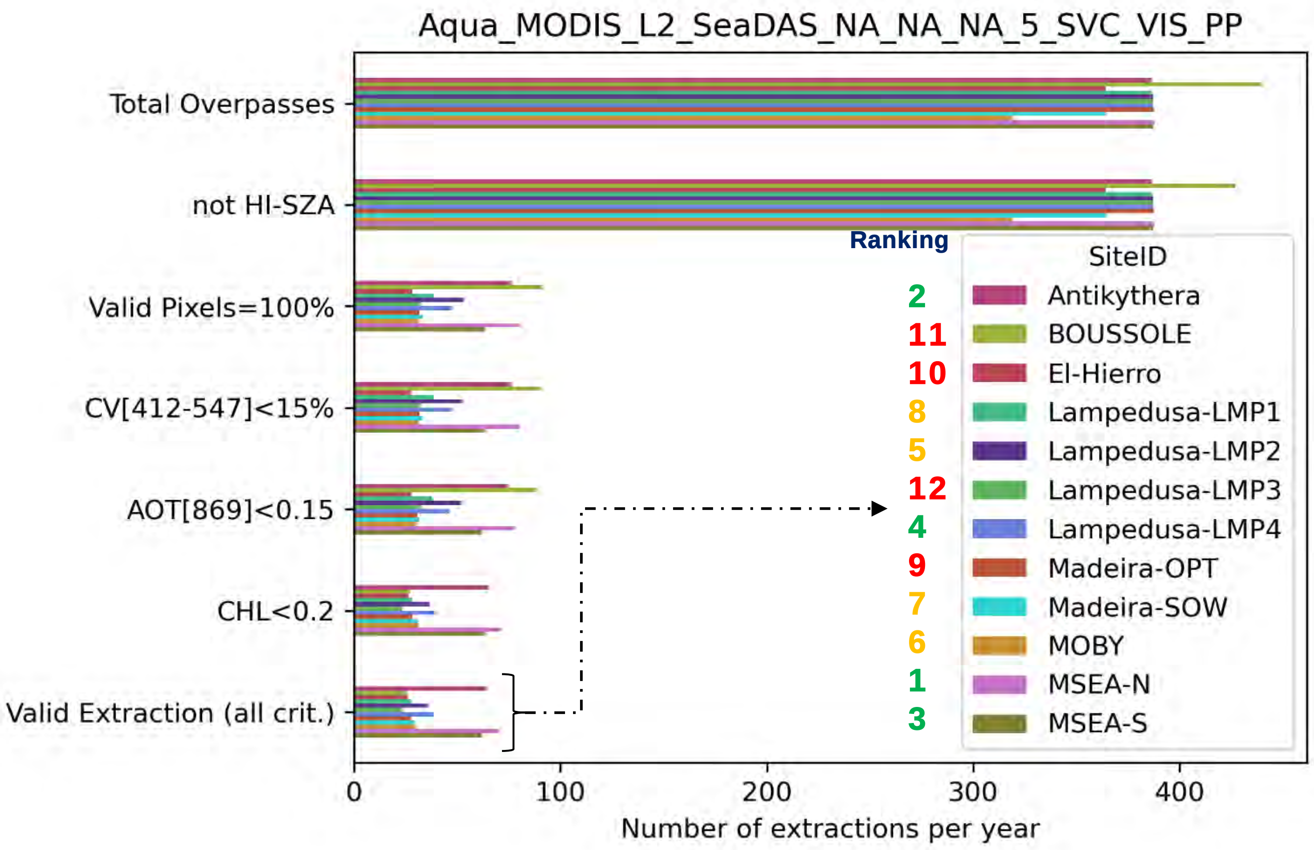


OLCI-B (SVC_VIS_PP)

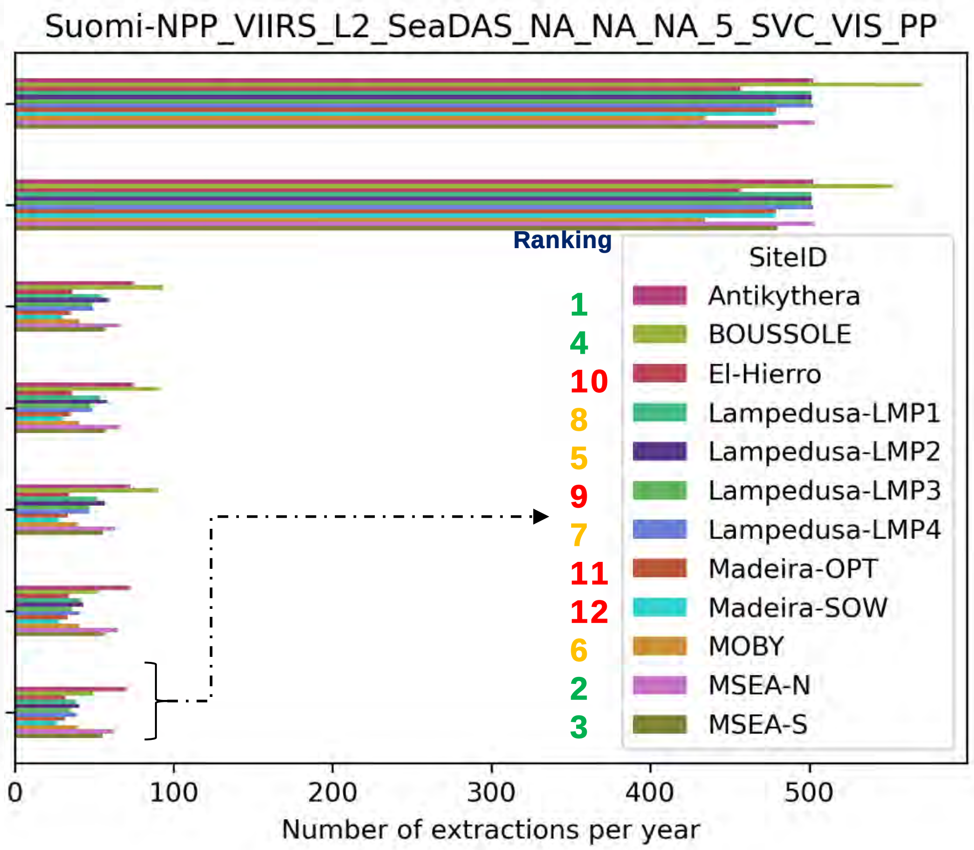


Global results, MODISA and VSNPP

MODISA (SVC_VIS_PP)



VSNPP (SVC_VIS_PP)



Global results in seasons (SVC_VIS_PP)

OLCI-A: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	5.2	1.9	11.8	1.5	1.3	1.9	2.3	8.7	4.1	12.6	5.6	6.4
MAM	8.7	2.1	14.7	6.9	7.3	7.1	7.5	12	7.9	13.9	8.9	9.7
JJA	18.6	13.1	15.3	11.8	10.8	11.4	12.9	17.6	10.6	14.3	19.1	18.7
SON	9.9	9.9	15.3	7.3	9.6	9.4	9.1	13.5	10.2	14.3	10.6	12.8
Yearly	**42.3**	**27**	**57**	**27.6**	**29.1**	**29.9**	**31.8**	**51.8**	**32.9**	**55.1**	**44.3**	**47.5**

OLCI-B: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	4.8	1.6	10.2	2.9	1.9	2.9	1.6	8.1	5.5	16.6	6.1	7.4
MAM	10.0	1.3	14.7	8.0	8.9	8.6	8.6	12.3	7.1	15.0	12.0	11.0
JJA	21.3	13.9	13.8	12.5	8.3	12.8	10.5	17.8	13.6	13.4	21.0	18.4
SON	11.6	8.7	13.8	7.0	8.6	8.3	6.7	13.0	9.1	13.8	12.3	12.9
Yearly	**47.8**	**25.6**	**52.5**	**30.4**	**27.8**	**32.6**	**27.5**	**51.2**	**35.3**	**58.8**	**51.4**	**49.8**

- Highly consistent seasonal and overall performances between OLCI-A and OLCI-B

Global results in seasons (SVC_VIS_PP)

MODISA: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	4.0	4.4	6.2	1.8	1.0	1.0	1.6	5.8	4.6	12.6	7.0	5.8
MAM	14.6	3.0	6.8	7.4	10.2	4.6	9.8	4.4	7.0	5.6	15.0	13.8
JJA	29.4	11.4	5.4	11.2	15.4	8.6	17.8	9.0	9.4	4.0	31.6	25.0
SON	16.2	6.8	7.8	7.4	9.2	9.0	9.4	8.4	8.4	8.0	16.4	17.6
Yearly	**64.2**	**25.6**	**26.2**	**27.8**	**35.8**	**23.2**	**38.6**	**27.6**	**29.4**	**30.2**	**70.0**	**62.2**

VSNPP: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	10.9	4.4	9.9	2.1	2.1	2.3	4.5	8.0	4.4	15.9	10.0	7.0
MAM	12.5	2.5	6.3	9.1	10.5	7.3	8.8	5.6	6.0	7.8	10.5	10.3
JJA	28.4	23.8	8.5	17.3	18.6	15.9	18.0	9.0	8.3	4.9	24.4	20.4
SON	18.5	18.5	7.5	10.4	9.4	9.5	8.0	8.9	8.0	11.1	17.3	17.6
Yearly	**70.3**	**49.1**	**32.1**	**38.9**	**40.6**	**34.9**	**39.3**	**31.5**	**26.6**	**39.6**	**62.1**	**55.3**

- Not as consistent seasonal and overall performances when comparing

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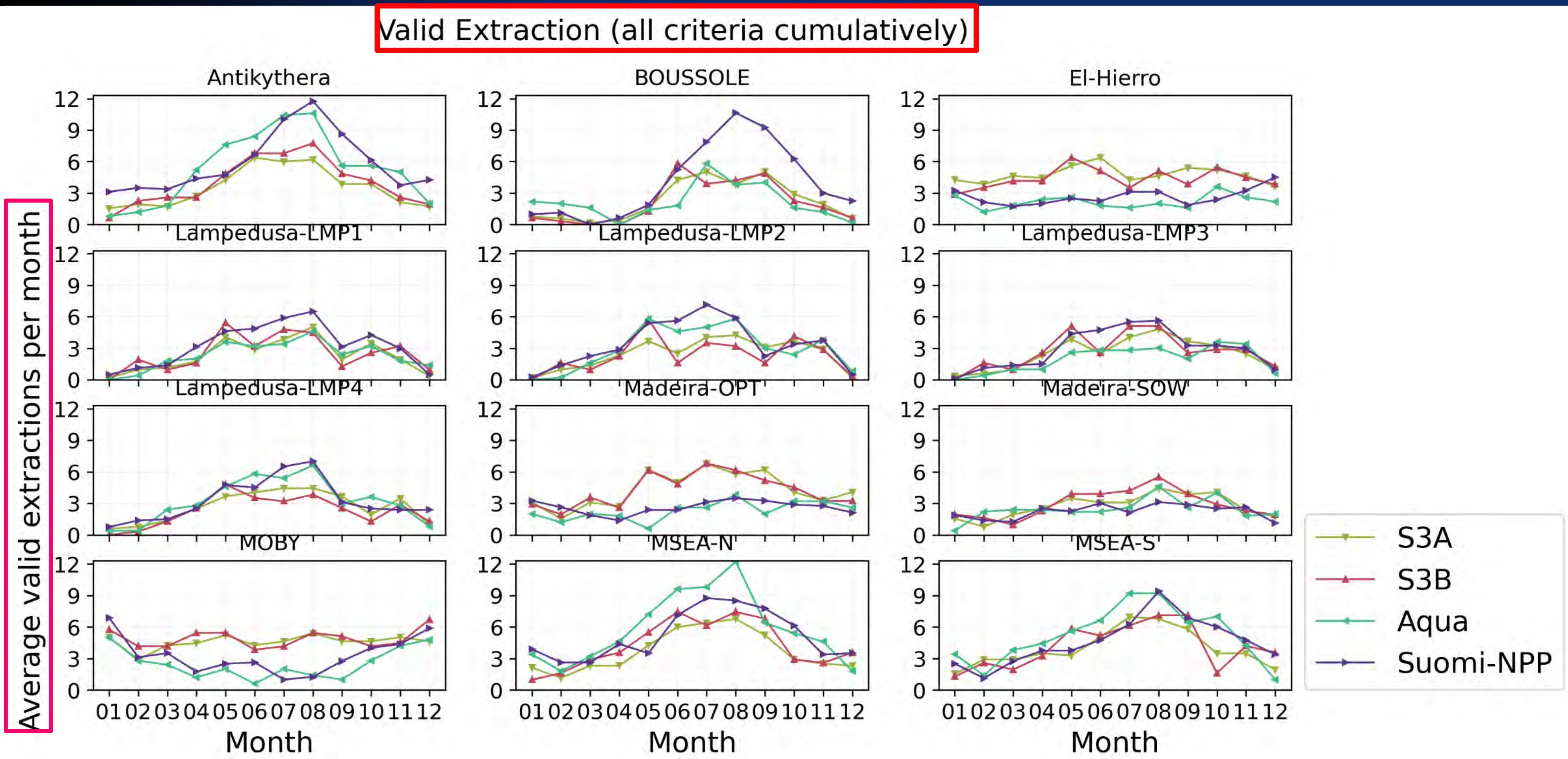
Average valid extractions per month (SVC_VIS_PP)



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Conclusions

1) OLCI-A and OLCI-B valid extractions according to the standard OC-SVC protocol (SVC_VIS_PP)

   i. OLCI-A and OLCI-B: **MOBY**, **El Hierro**, **Madeira-OPT** and **MSEA-S/N (Crete)** yield the highest number of valid extractions

   ii. El Hierro (57/52.5) and MOBY (55.1/58.8), then secondly Madeira-OPT (51.8/51.2), and thirdly the Create sites, particularly MSEA-N (44.3/51.4) and MSEA-S (47.5/49.8)

   iii. The seasonal distribution of valid extractions is the most balanced in the above order

2) MODISA and VSNPP valid extractions according to the standard OC-SVC protocol (SVC_VIS_PP)

   i. MODISA and VSNPP: Crete sites **MSEA-S/N** and **Antikythera** yield the highest number of valid extractions, specifically MSEA-N (70/62.1), Antikythera (64.2/70.3), and MSEA-S (62.2/55.3)

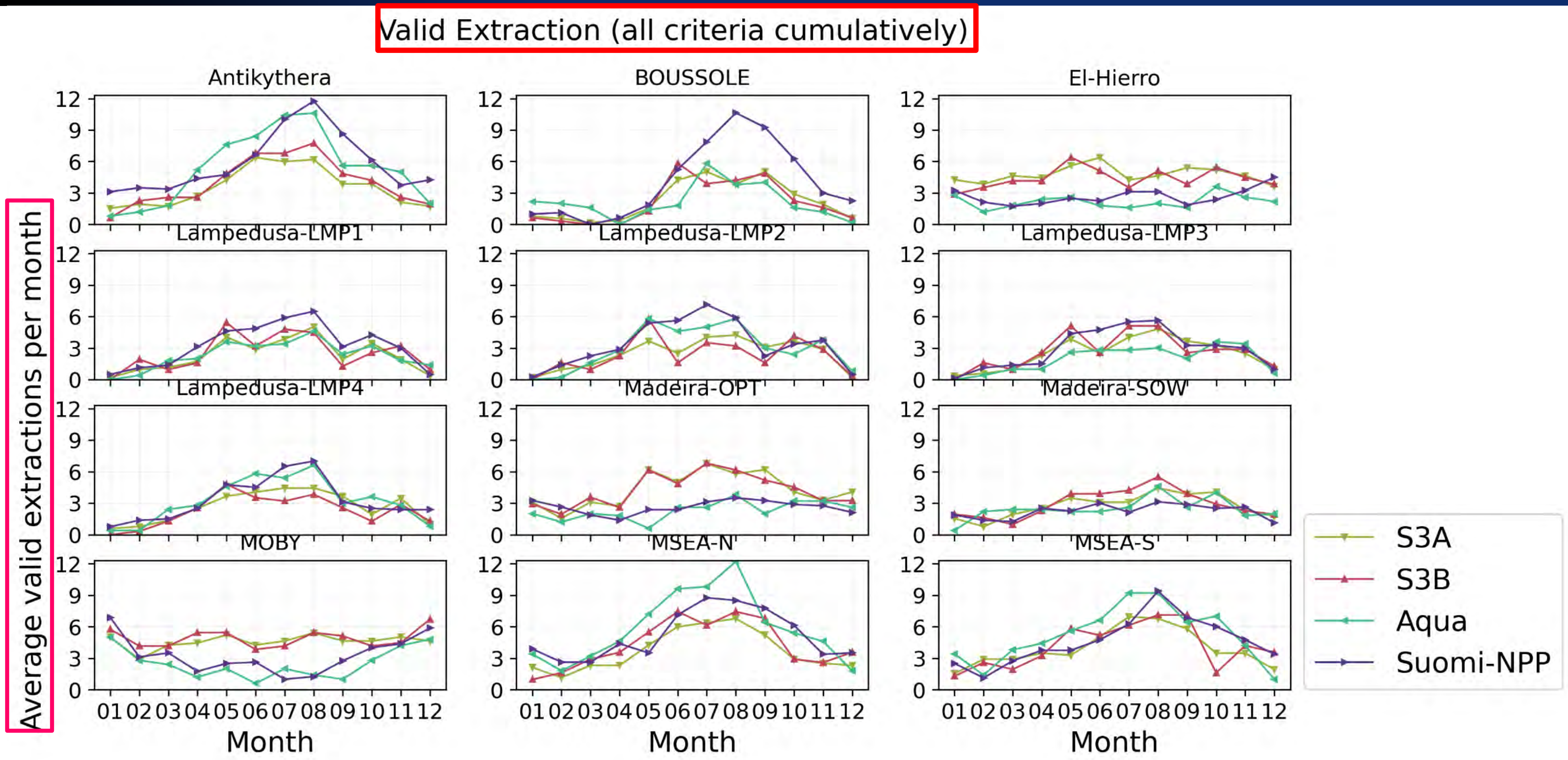
   ii. MODISA and VSNPP provide markedly worse performance for El Hierro, MOBY and Madeira when compared with OLCI-A and OLCI-B

   iii. The seasonal distribution of valid extractions at the Crete sites is relatively balanced but with some decrement in winter months

Extra slides

Investigation of differences in valid extractions between OLCI and VIIRS/MODIS

Average valid extractions per month (SVC_VIS_PP)



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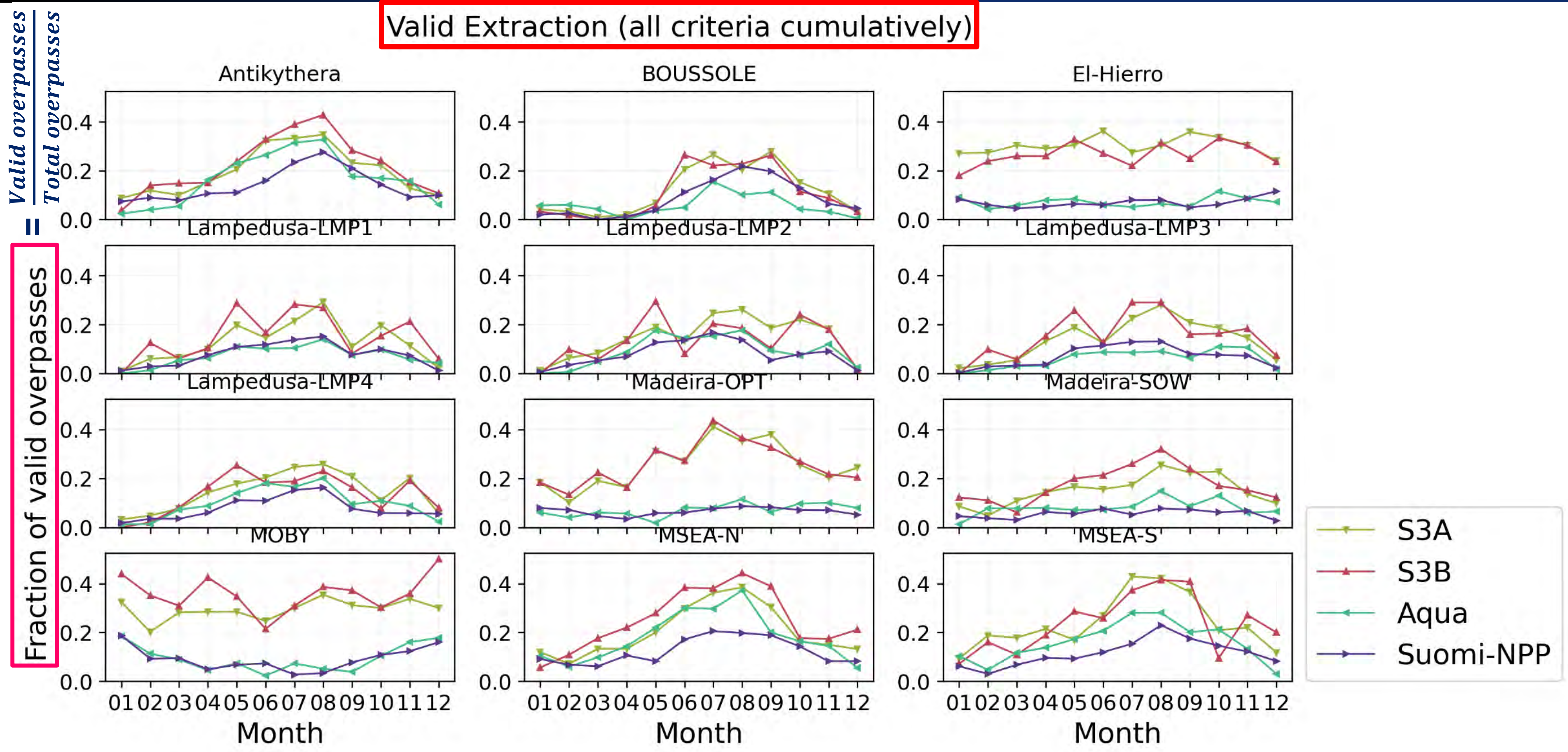
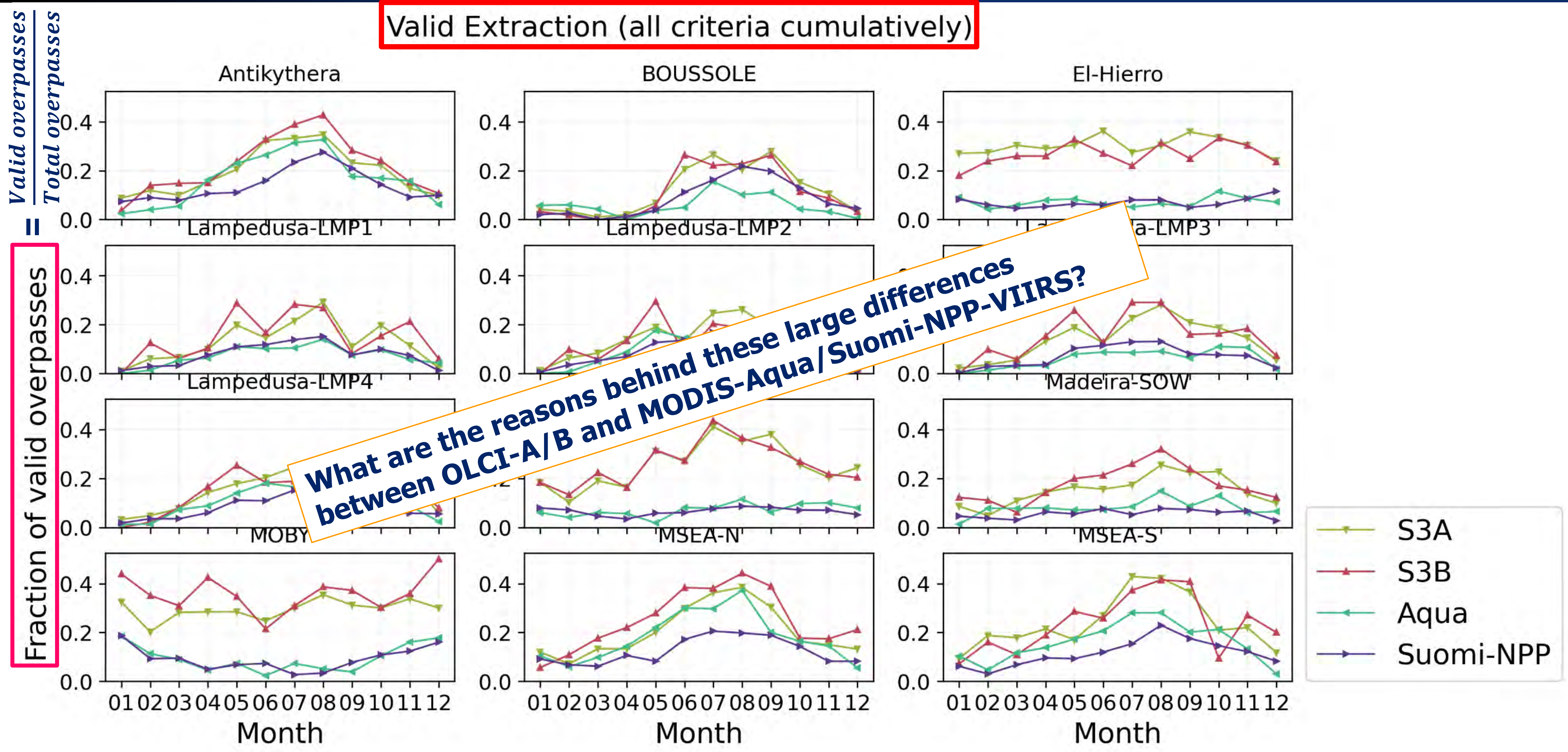
Monthly prevalence of valid extractions (SVC_VIS_PP)



Monthly prevalence of valid extractions (SVC_VIS_PP)



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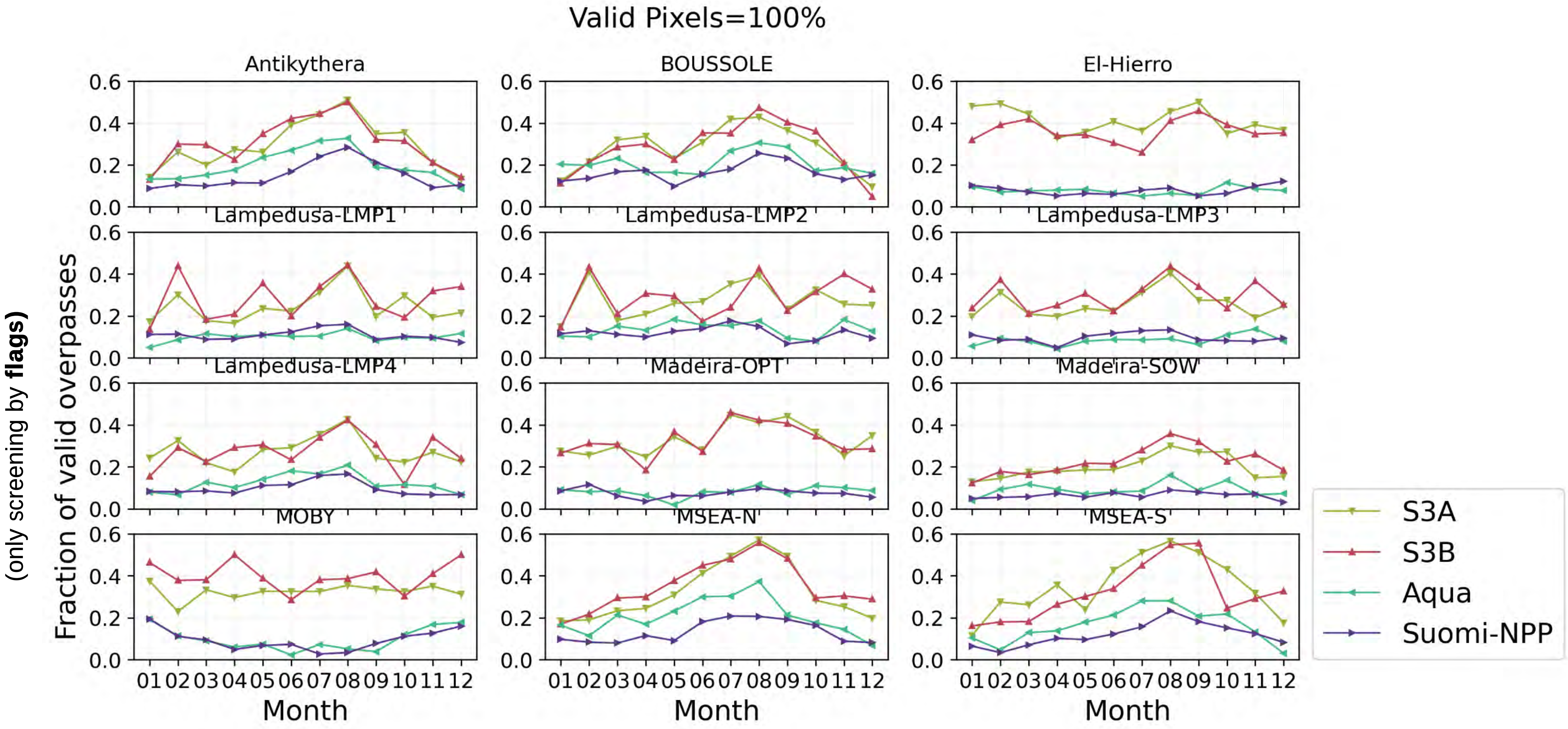
1) Flags…



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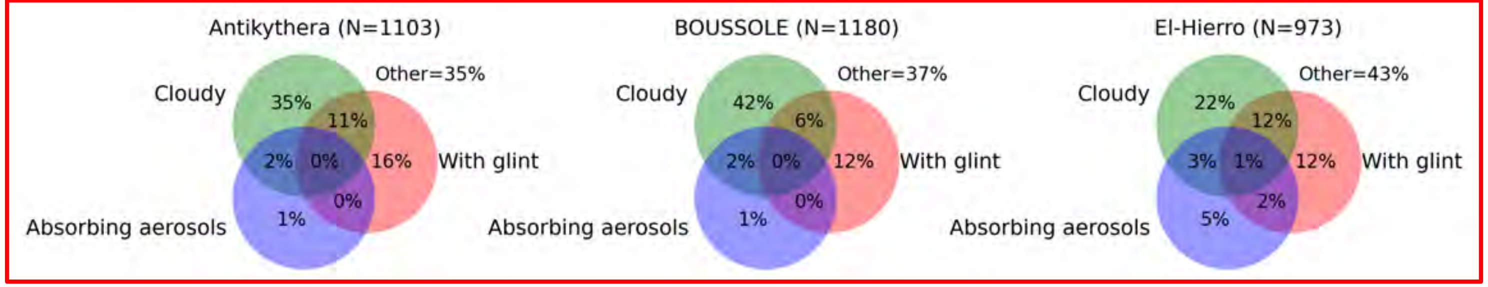
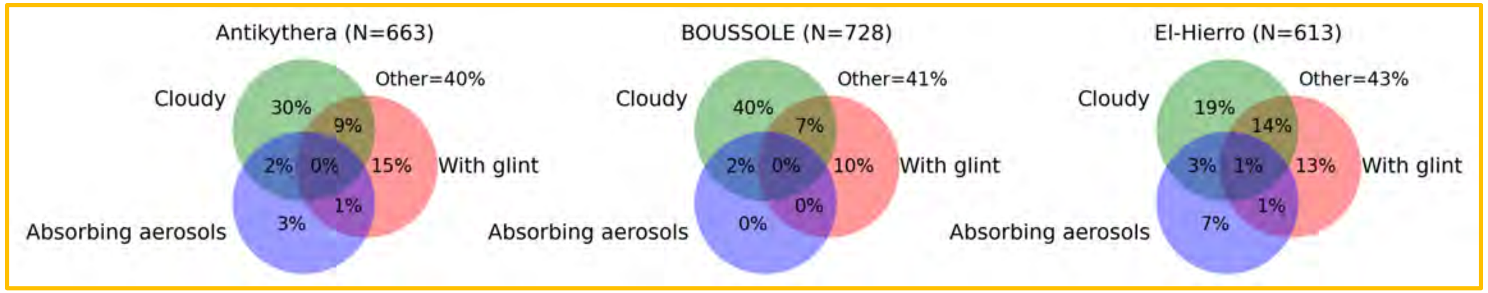
In particular clouds….

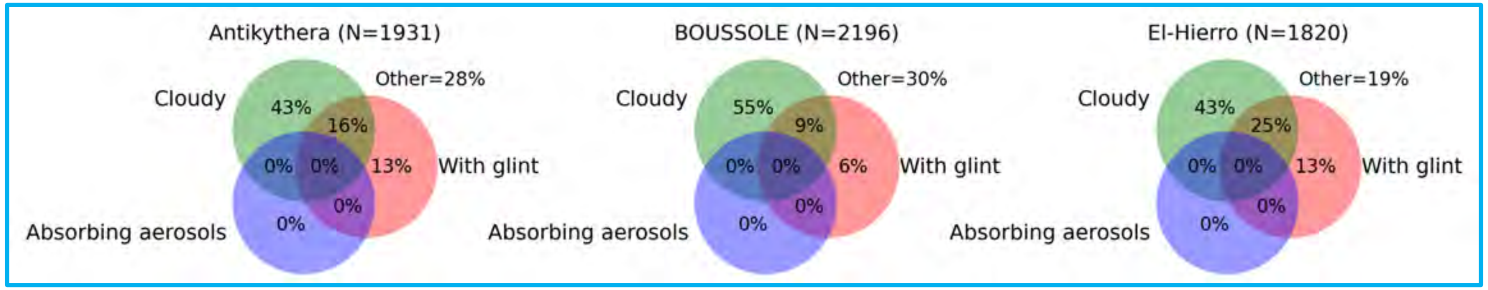


OLCI-A

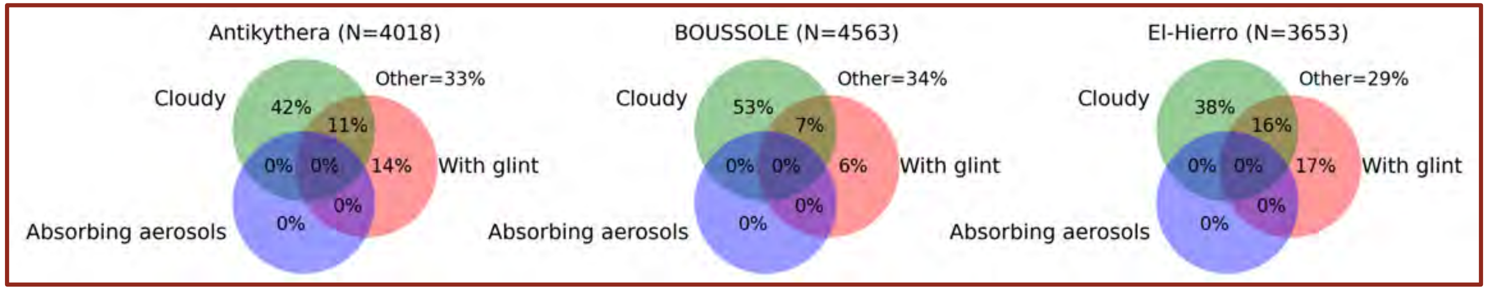
N: Total number of overpasses



OLCI-B



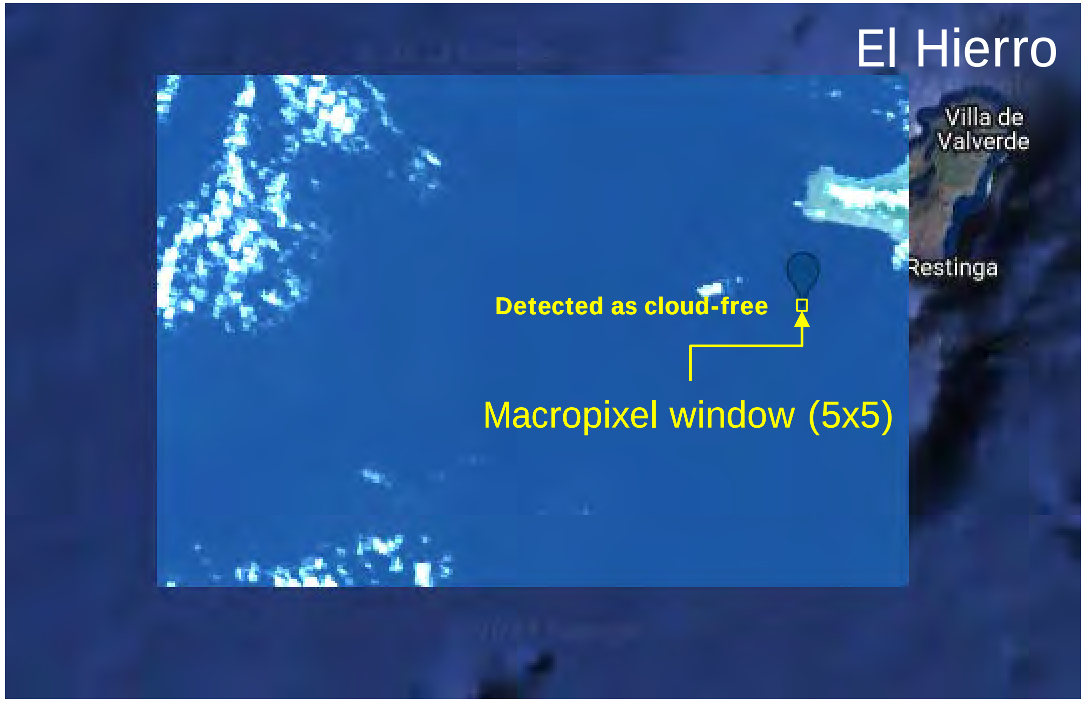
MODISA

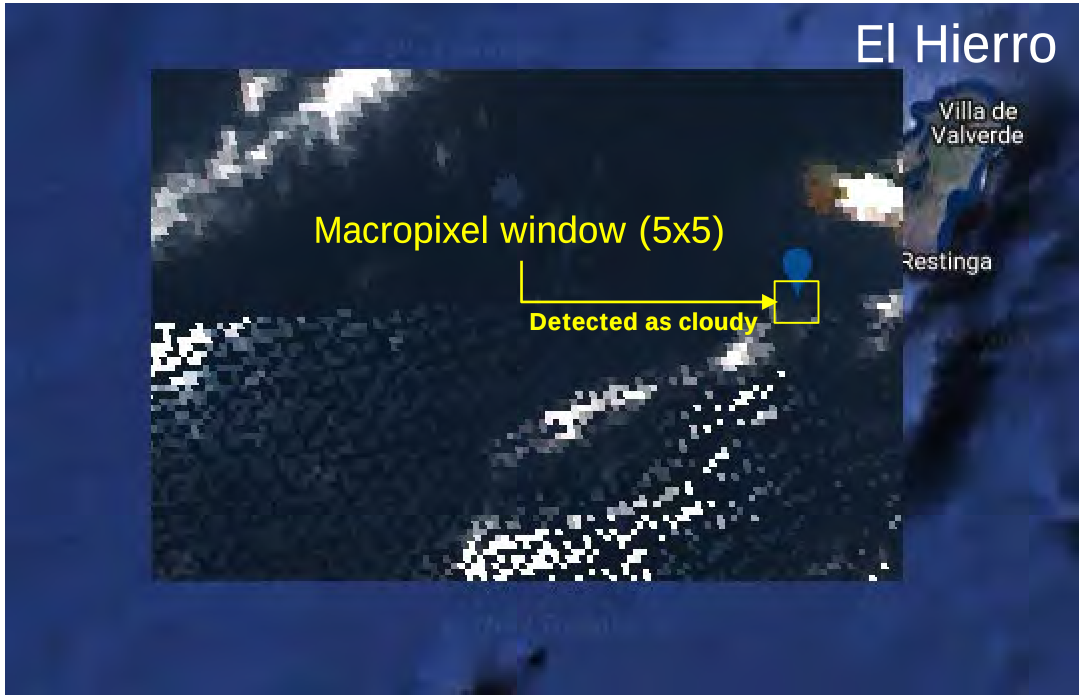


VSNPP

Scattered clouds, spatial resolution and window sizes

OLCI-B — **10/04/2019 11:13** ⟷ **VIIRS** — **10/04/2019 13:30**





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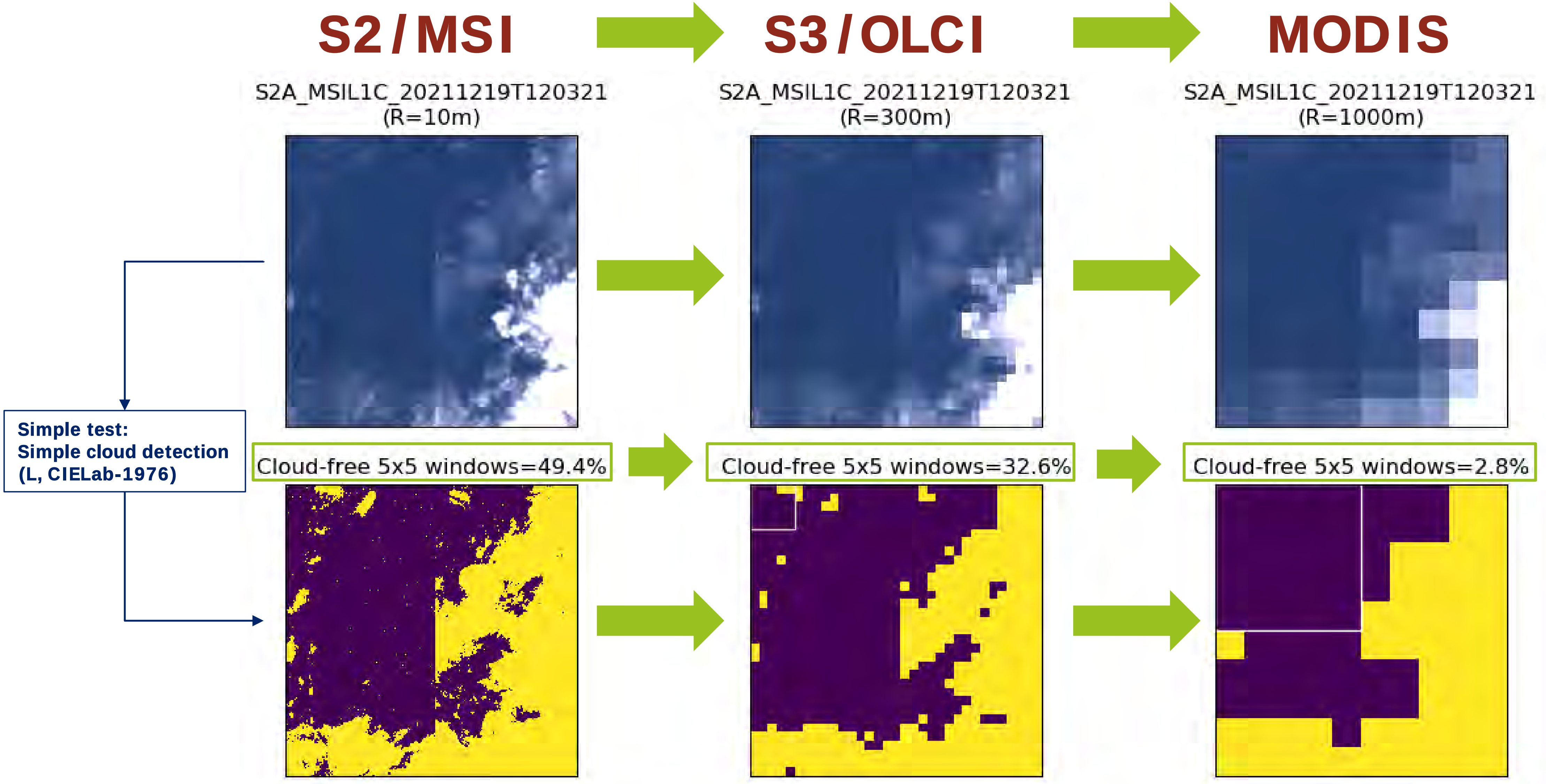
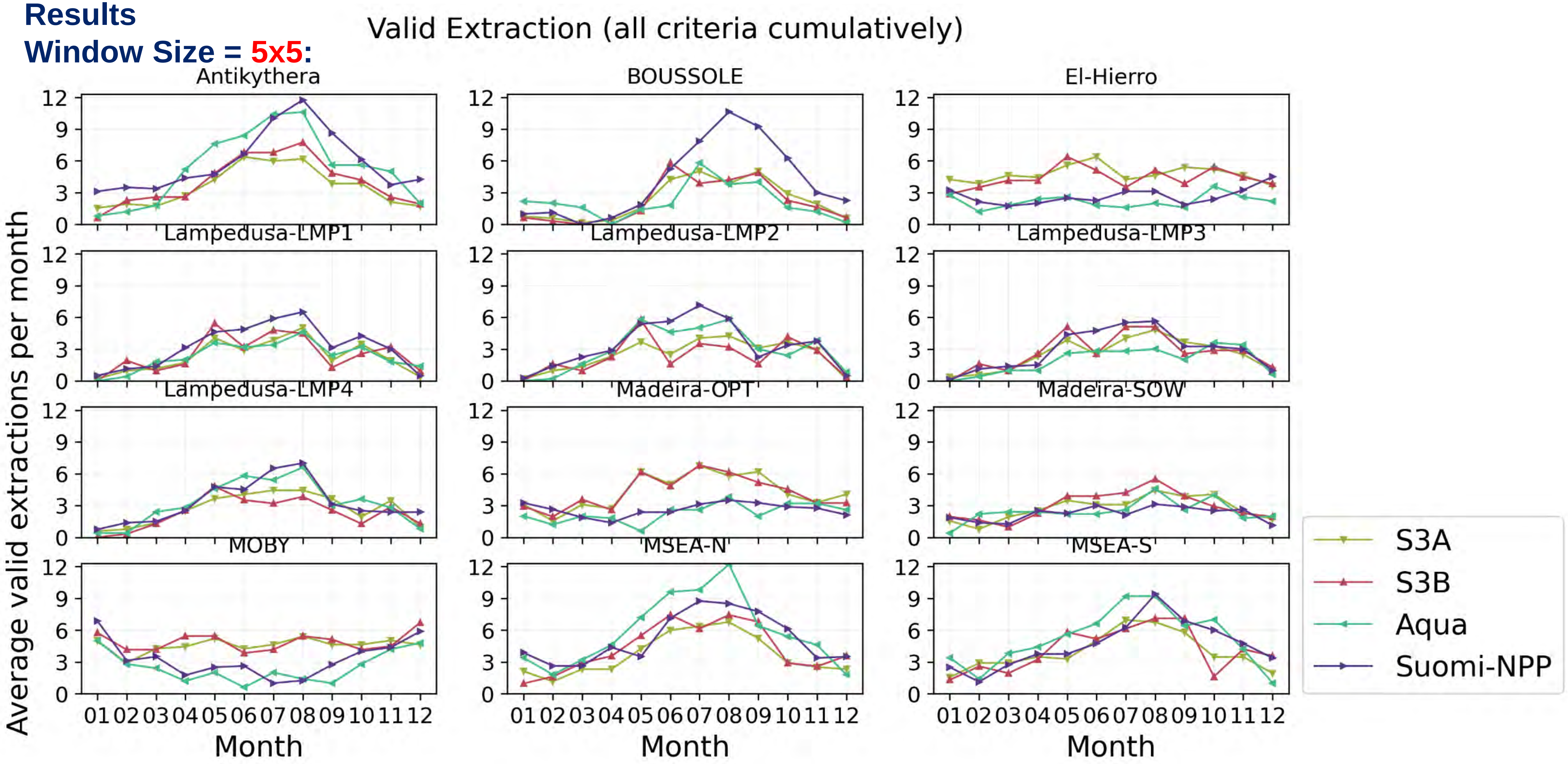
Scattered clouds, spatial resolution and window sizes



Analysis of potential adjacency effect to nearby islands

Procedure: Comparison between results with 3x3 and 5x5 windows:

Results
Window Size = 5x5:



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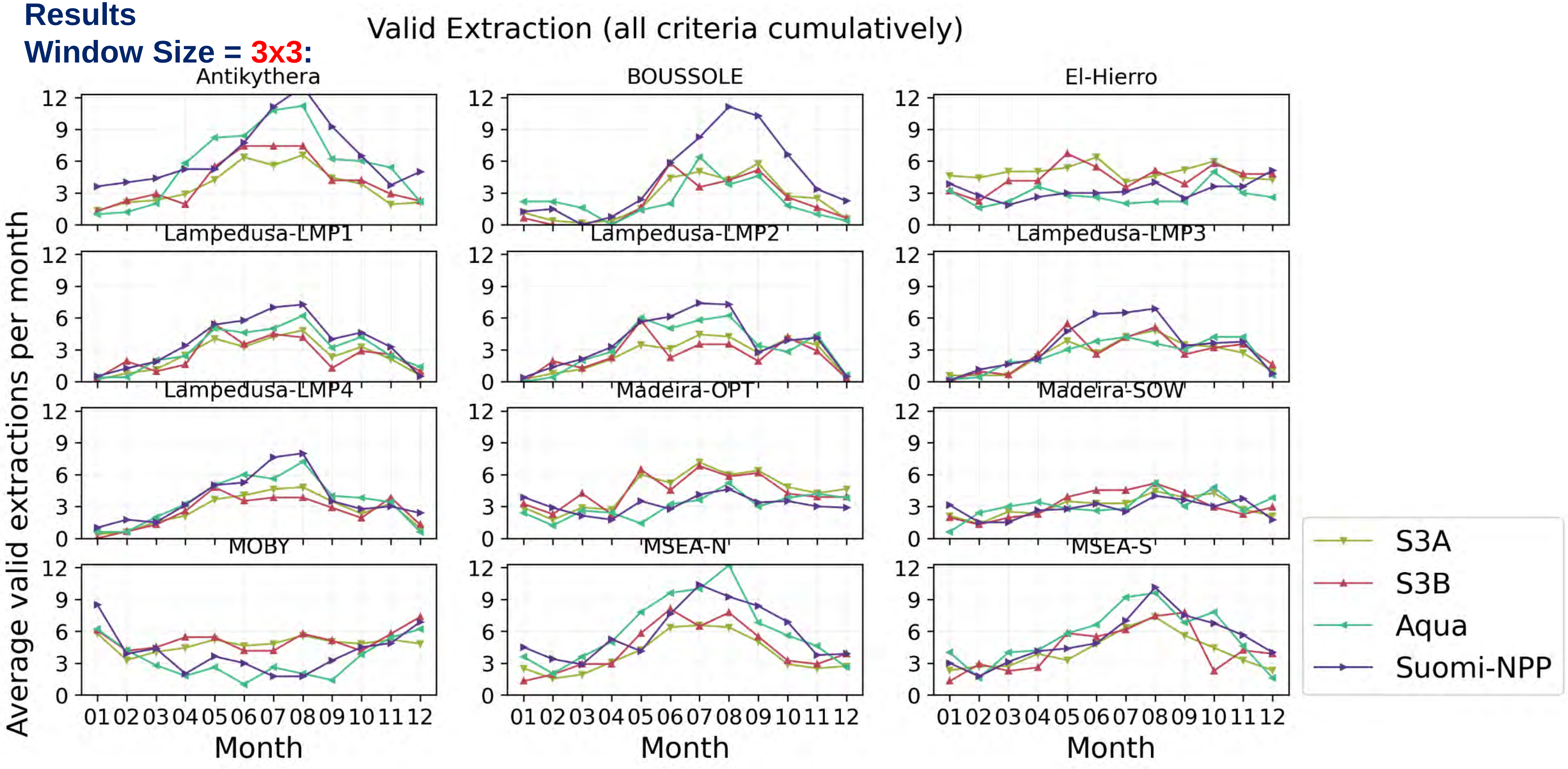
Analysis of potential adjacency effect to nearby islands

Procedure: Comparison between results with 3x3 and 5x5 windows:

Results
Window Size = 3x3:



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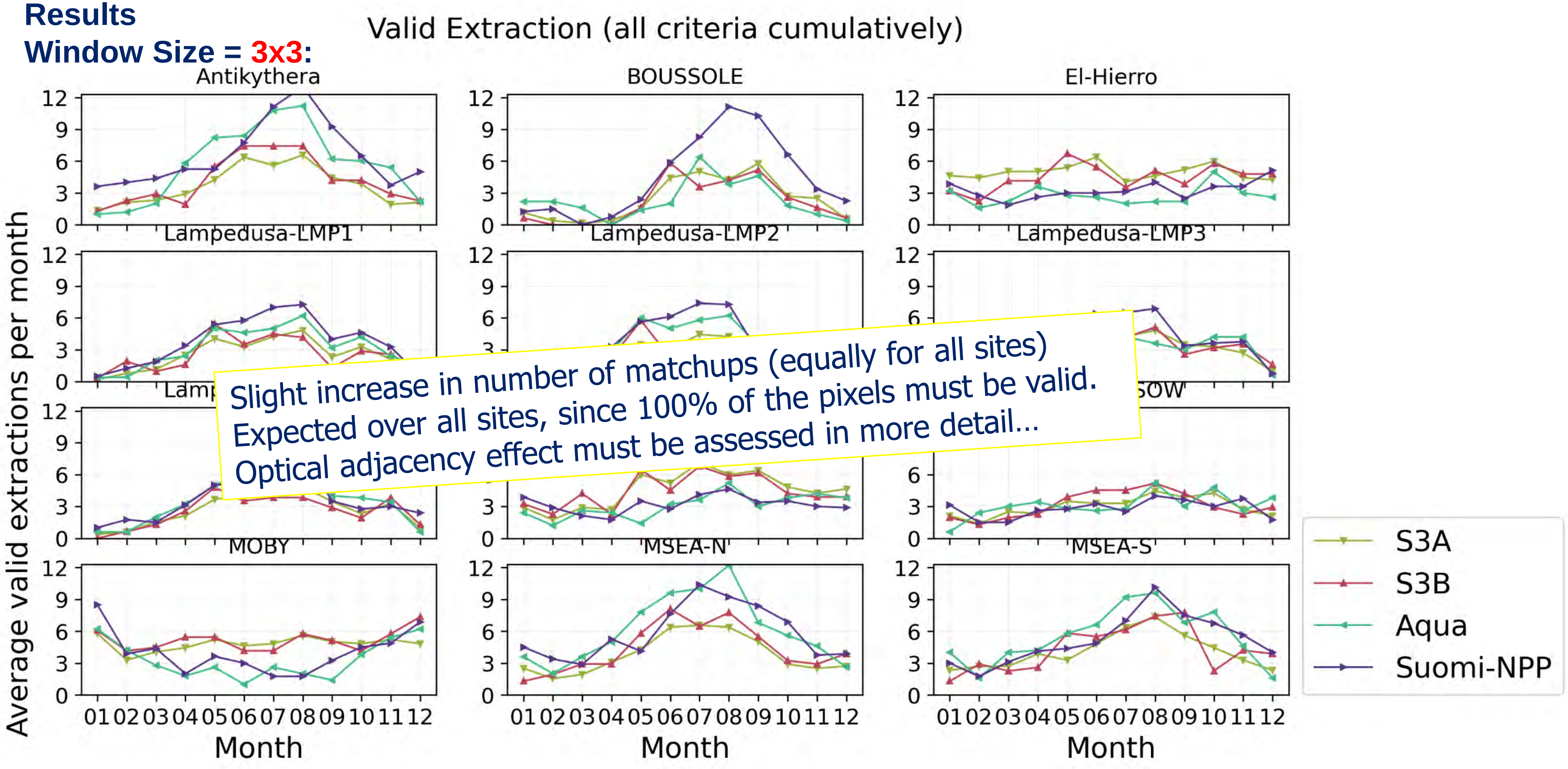
Analysis of potential adjacency effect to nearby islands

Procedure: Comparison between results with 3x3 and 5x5 windows:

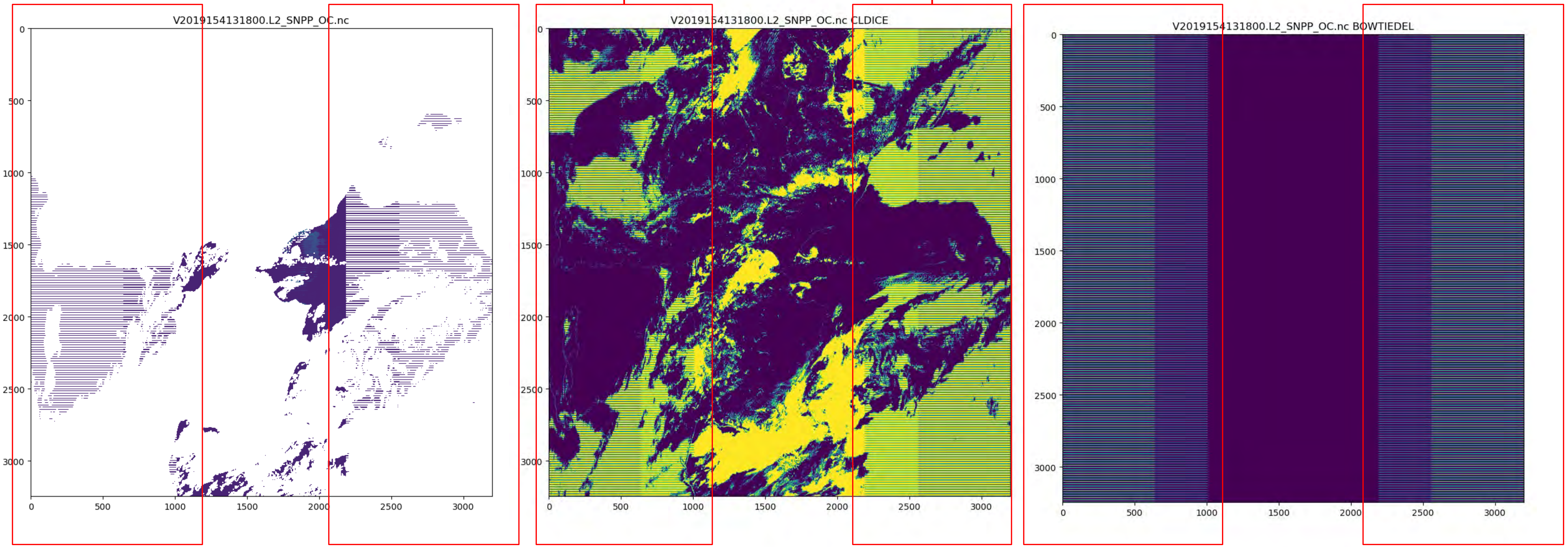
Results
Window Size = 3x3:



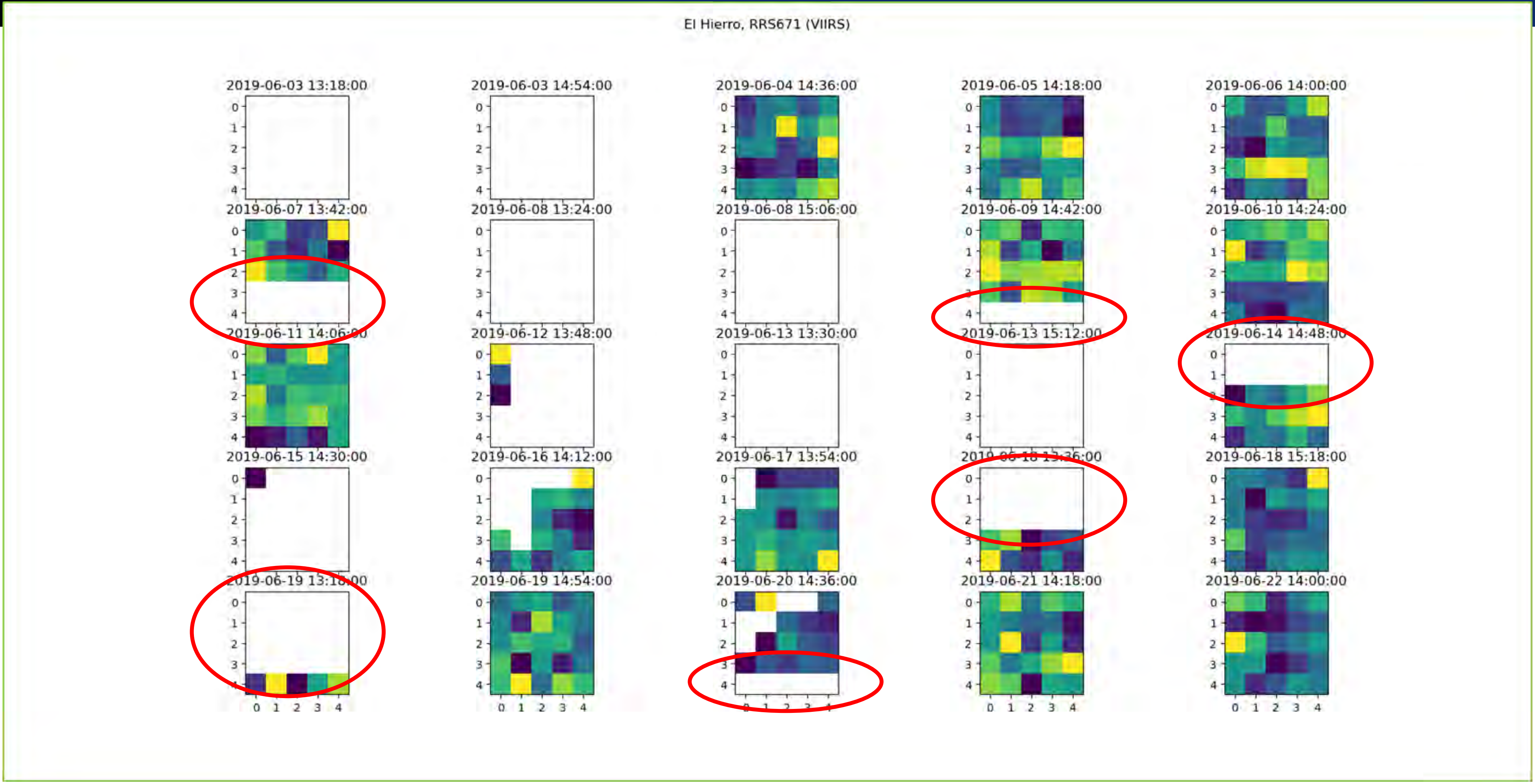
VIIRS: BOW-TIE deletion

V2019153131800.L2_SNPP.OC (NASA GSFC)

Affects 2 / 3 of the swath…



Many 5x5 extractions for VIIRS are being affected by these BOWTIEDEL pixels:
Examples below: 25 different extractions from 25 different days. Site: El Hierro. Sensor VIIRS (Suomi-NPP)



Since these pixels are masked, these extractions are being **rejected** because of the requirement of having 100% valid pixels

Many 5x5 extractions for VIIRS are being affected by these BOWTIEDEL pixels:
Examples below: 25 different extractions from 25 different days. Site: El Hierro. Sensor VIIRS (Suomi-NPP)

Since these pixels are masked, these extractions are being **rejected** because of the requirement of having 100% valid pixels

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Sensitivity of the results to variations in the screening criteria

Sensitivity of the results to variations in the screening

Variations of the screening criteria

2) Protocol **"SVC_VIS_PP_50"**
Description: Same as SVC_VIS_PP, but
- **Number of valid pixels** ≥ 13 (instead of 25)

3) Protocol **"SVC_VIS_PP_T865-0.1"**
Description: Same as SVC_VIS_PP, but
- **AOT(NIR)** < 0.1 (instead of 0.15)

4) Protocol **"SVC_VIS_PP_A865-1"**
Description: Same as SVC_VIS_PP, but
- **ANG(NIR)** < 1 (additional condition)

5) Protocol **"SVC_VIS_PP_CHL-0.1"**
Description: Same as SVC_VIS_PP, but
- **CHL** < 0.1 (instead of 0.2)

6) Protocol **"SVC_VIS_PP_CHL-0.3"**
Description: Same as SVC_VIS_PP, but
- **CHL** < 0.3 (instead of 0.2)

7) Protocol **"SVC_VIS_PP_flagSet1"**
Description: Same as SVC_VIS_PP, but
- Not considering flags for: **moderate glint** and **absorbing aerosols**

SZA = Solar Zenith Angle
OZA = Observation Zenith Angle
CV = Coefficient of Variation = Standard deviation/Mean x 100%
ρ_w(x nm) = Water reflectance at x nm
AOT(x nm) = Aerosol optical thickness at x nm
ANG(x nm) = Aerosol Ångström exponent at x nm
CHL_x = Chlorophyll concentration, algorithm X

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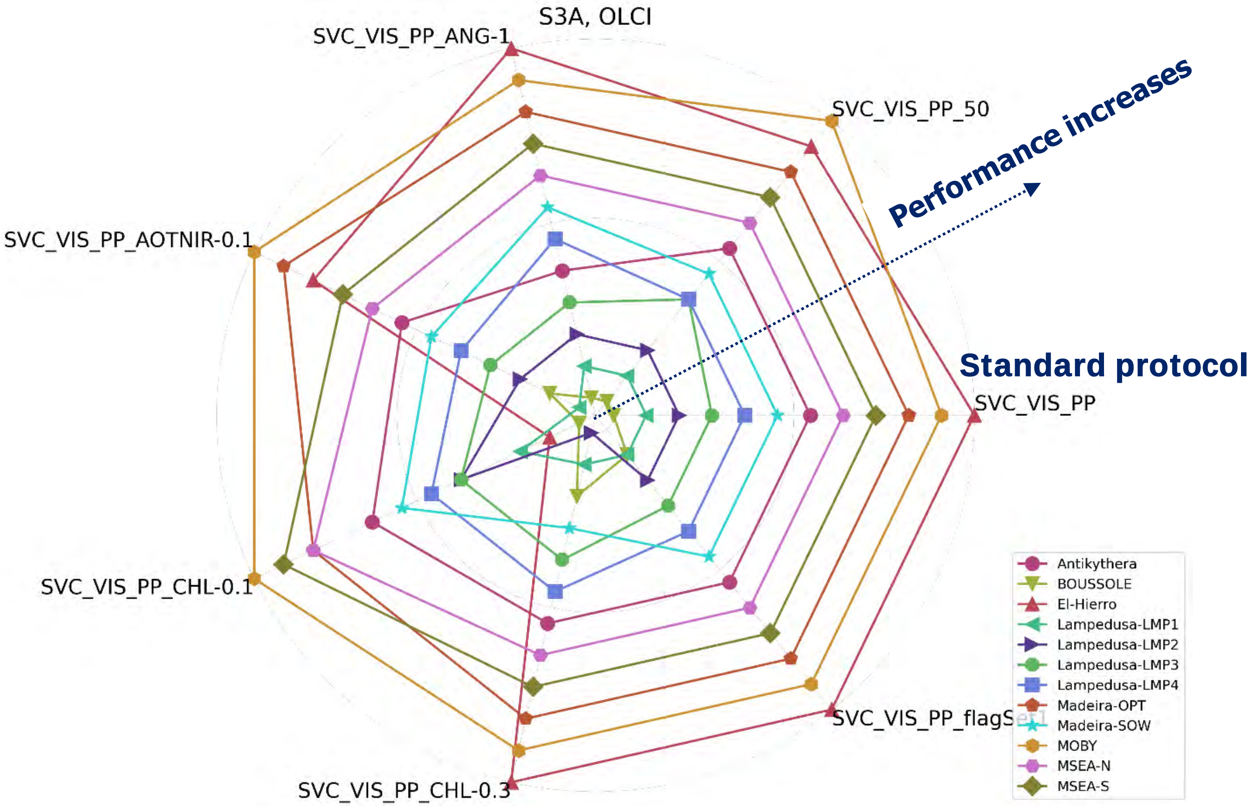
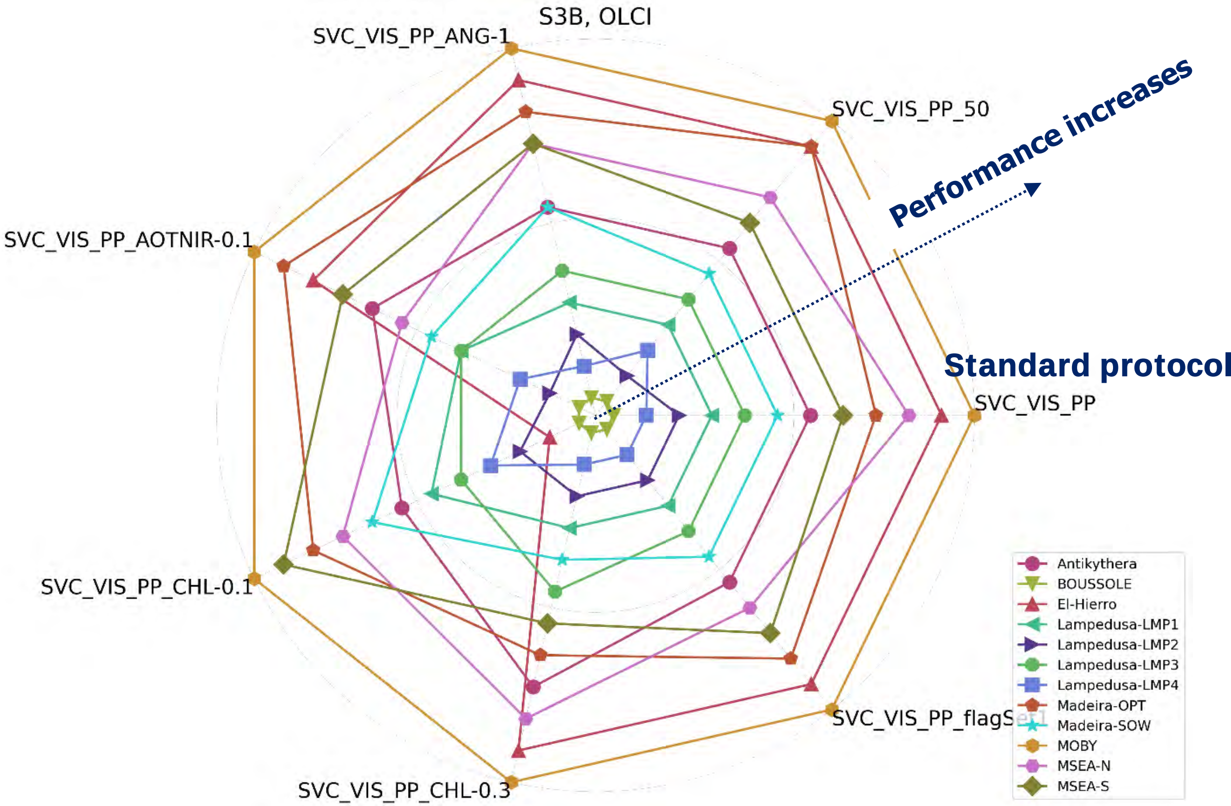
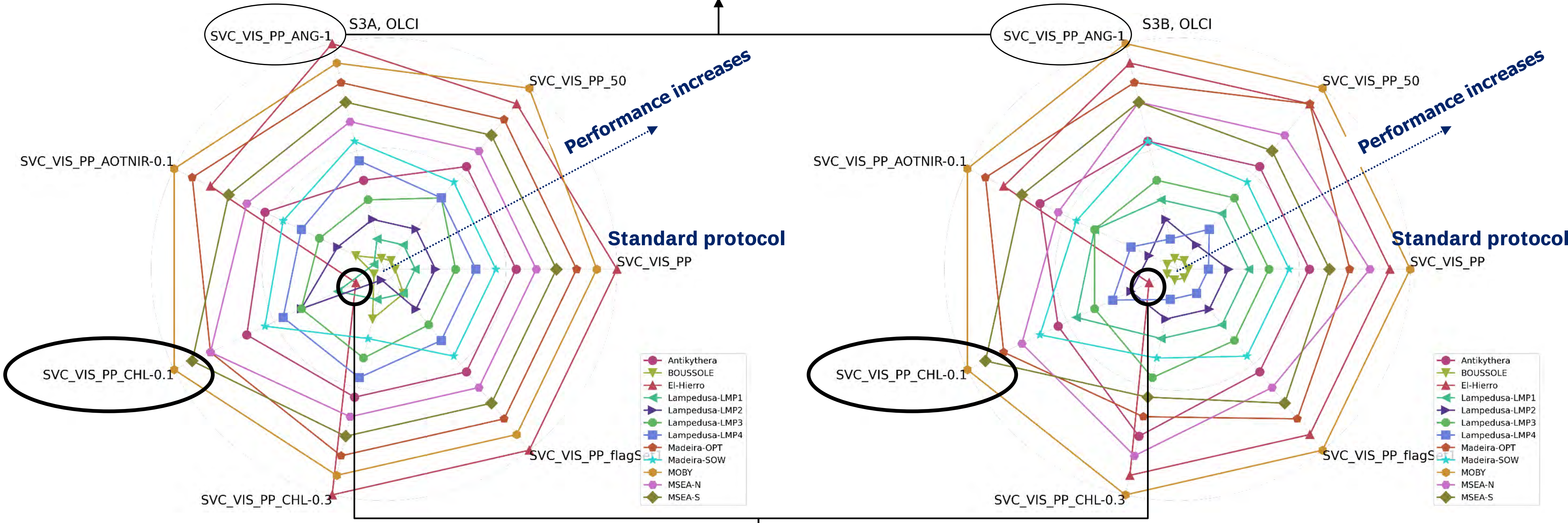
Sensitivity of the results to variations in the screening RANKINGS – OLCI-A & OLCI-B





Sensitivity of the results to variations in the screening RANKINGS – OLCI-A & OLCI-B

No substantial impact of adding constraint over the Angstrom exponent



In particular, El Hierro shows substantially decreased performance when imposing CHL<0.1 mg/m^3 instead of CHL<0.2 mg/m^3 ...

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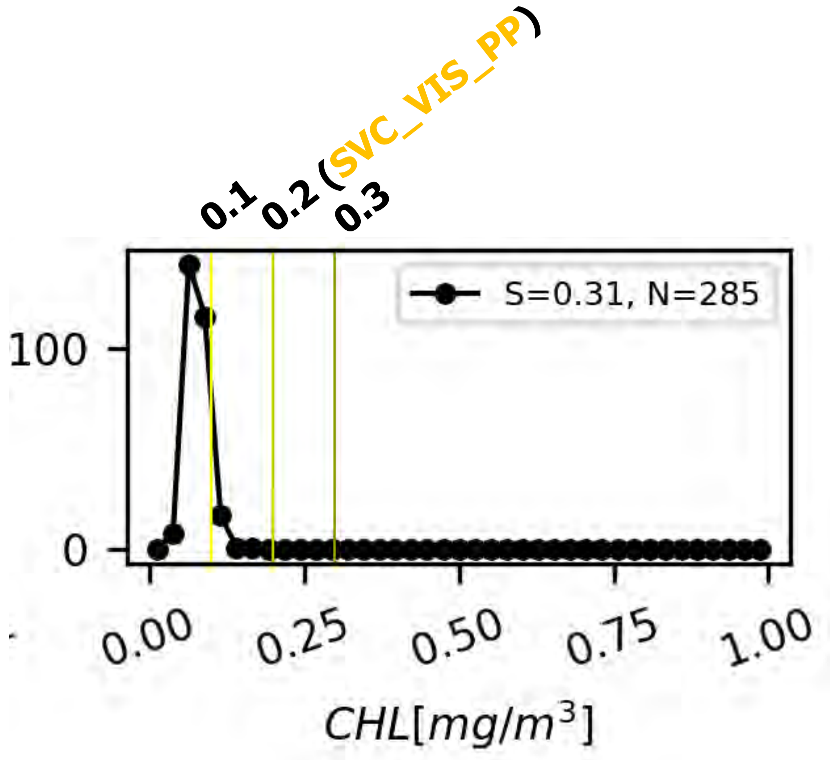
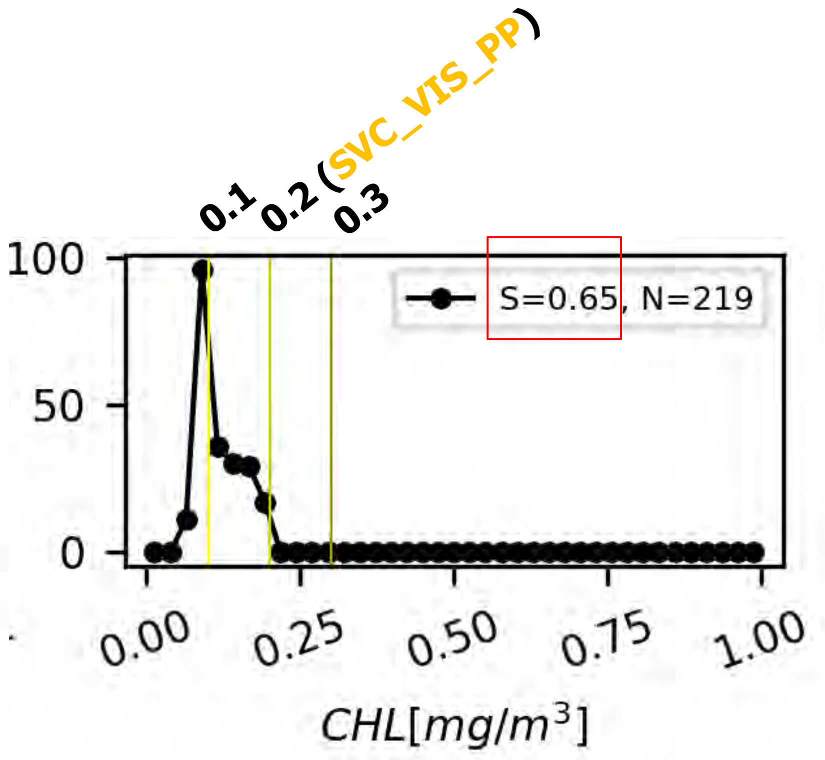
Chlorophyll-a distributions
OLCI-A (Screened SVC_VIS_PP)

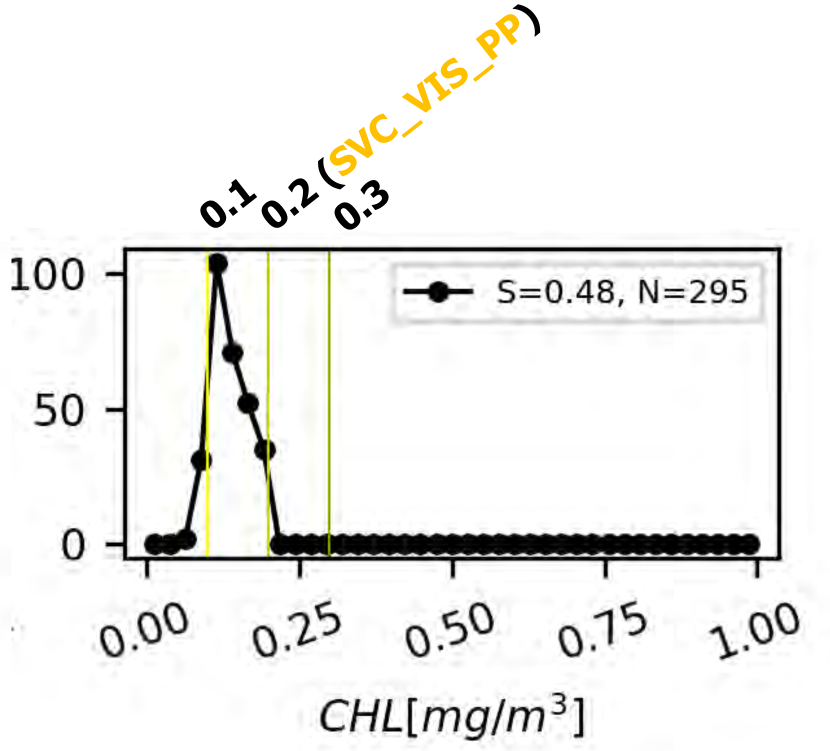
MOBY
- Mostly CHL<0.1mg/m^3
- Monomodal



Antikythera
- Partly CHL<0.1mg/m^3
- Bi-modal



El Hierro
- Mostly CHL>0.1mg/m^3
- Monomodal



Further conclusions

1) According to standard SVC protocol (SVC_VIS_PP)
   i. OLCI-A and OLCI-B: **MOBY**, **El Hierro**, **MSEA-S/N (Crete)**, **Madeira-OPT** yield the highest number of valid and annually balanced extractions
   ii. MODISA and VSNPP: Crete sites (**MSEA-S/N and Antikythera**) yield the highest number of valid extractions, with relatively balanced annual distributions
   iii. MODISA and VSNPP provide markedly worse performance for El Hierro, MOBY and Madeira than OLCI-A and OLCI-B.
2) Differences in **flagging** explain the main differences in the rankings found for MODISA, VSNPP and OLCI.
   i. **Cloud**-flagged pixels are observed 10%-to-20% more frequently in SeaDAS-processed MODISA and VSNPP wrt. standard OLCI products.
   ii. Overall differences: related to different prevalence of scattered clouds among the sites, combined with lower spatial resolution of MODIS and VIIRS and the BOW TIE effect in VIIRS.
3) **Slight variations in the screening criteria compared to the standard SC-SVC extraction protocol** show:
   i. OLCI: **Mostly consistent rankings** when compared to SVC_VIS_PP (except for e.g. SVC_VIS_PP_CHL-0.1, which yields markedly worsened performance for El Hierro).
   ii. MODISA & VSNPP: **Not so consistent** results among the protocols, and among the sensors (e.g. BOUSSOLE's performance is highly variable among the different protocols and between MODISA and VSNPP).
4) Overall distributions of water reflectance at 443 nm **do not** resemble Gaussian monomodal behaviour, although typically do not exhibit evident bi-modality (Sarle coefficient < 0.55, except for MSEA-N and MSEA-S for MODISA).
5) Overall distributions of chlorophyll **mostly resemble monomodal or bimodal behaviour**, with better-defined modes
   i. Bi-modality is mostly observed over Greek and Italian sites with highest (lowest) chlorophyll values in Winter (Summer).

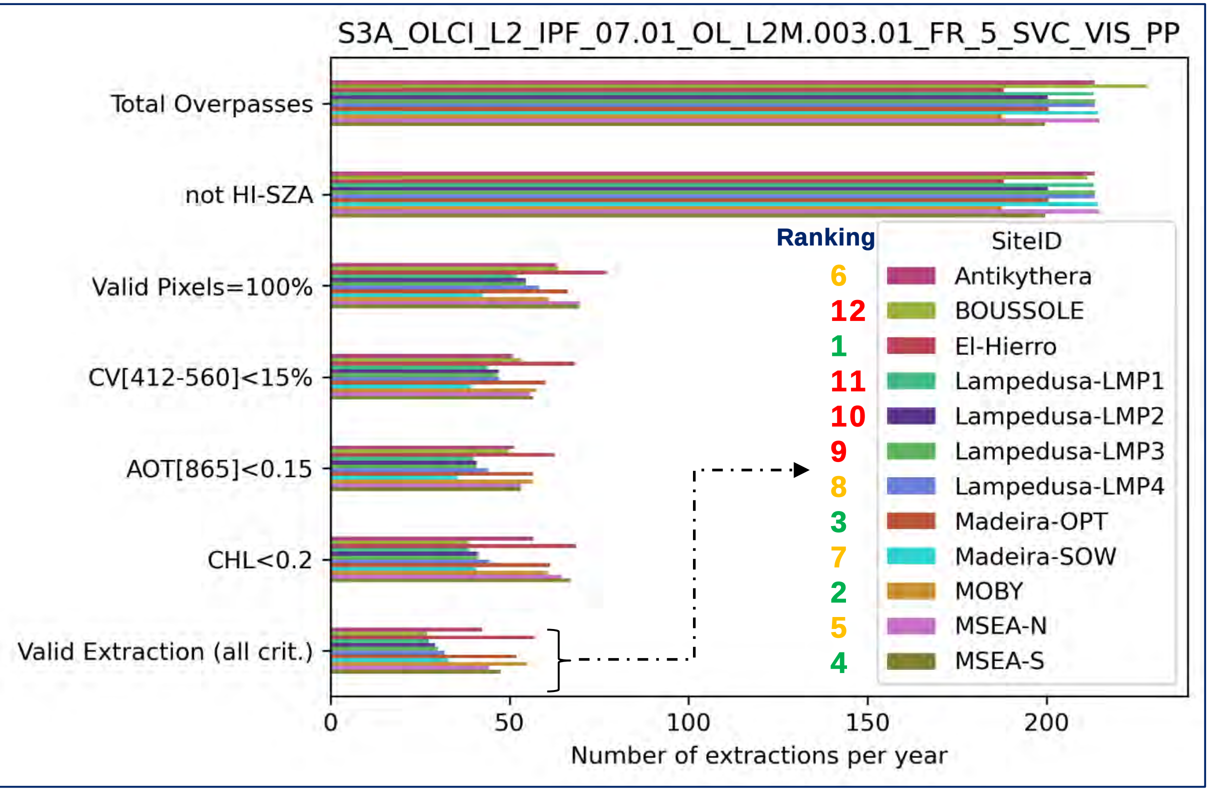
Detailed results for the standard protocol **SVC_VIS_PP** and for variations in the screening criteria

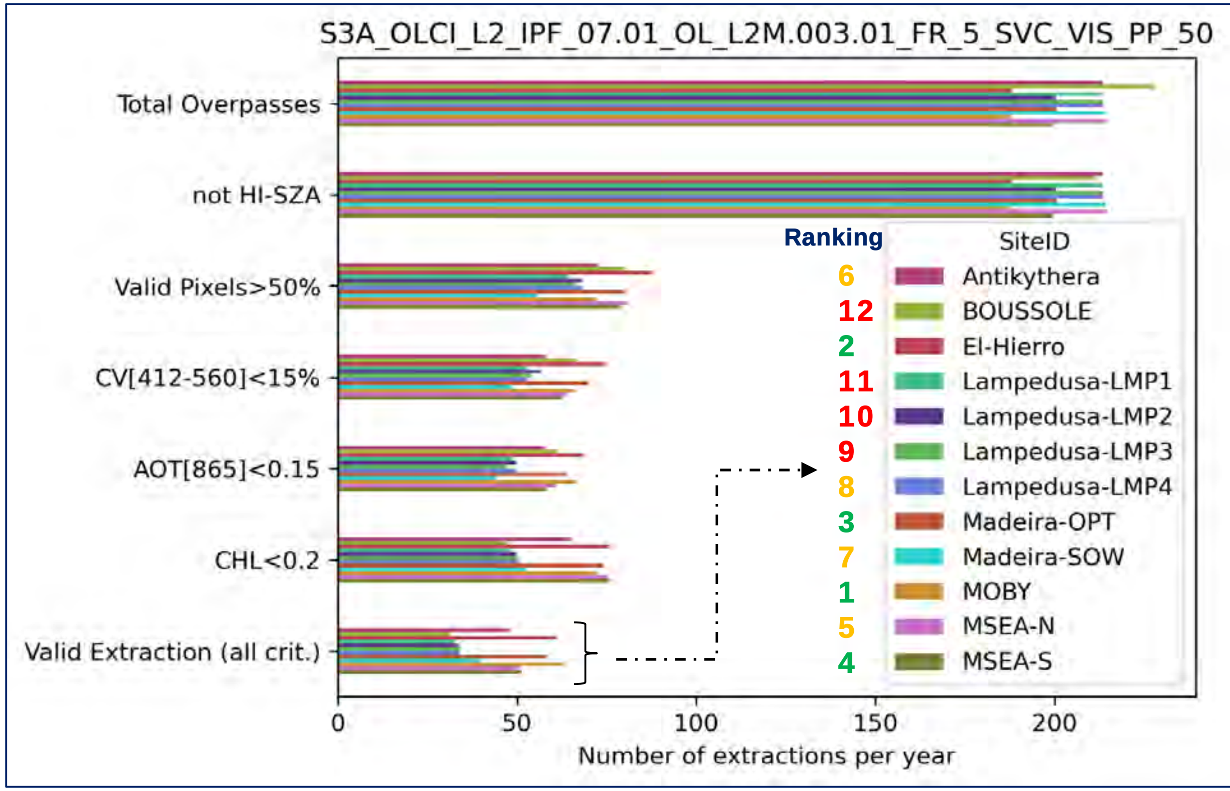
Sensitivity of the results to variations in the screening

OLCI-A

SVC_VIS_PP

Protocol **"SVC_VIS_PP_50"**
Description: Same as SVC_VIS_PP, but
- **Number of valid pixels** ≥ 13 (50%+1)





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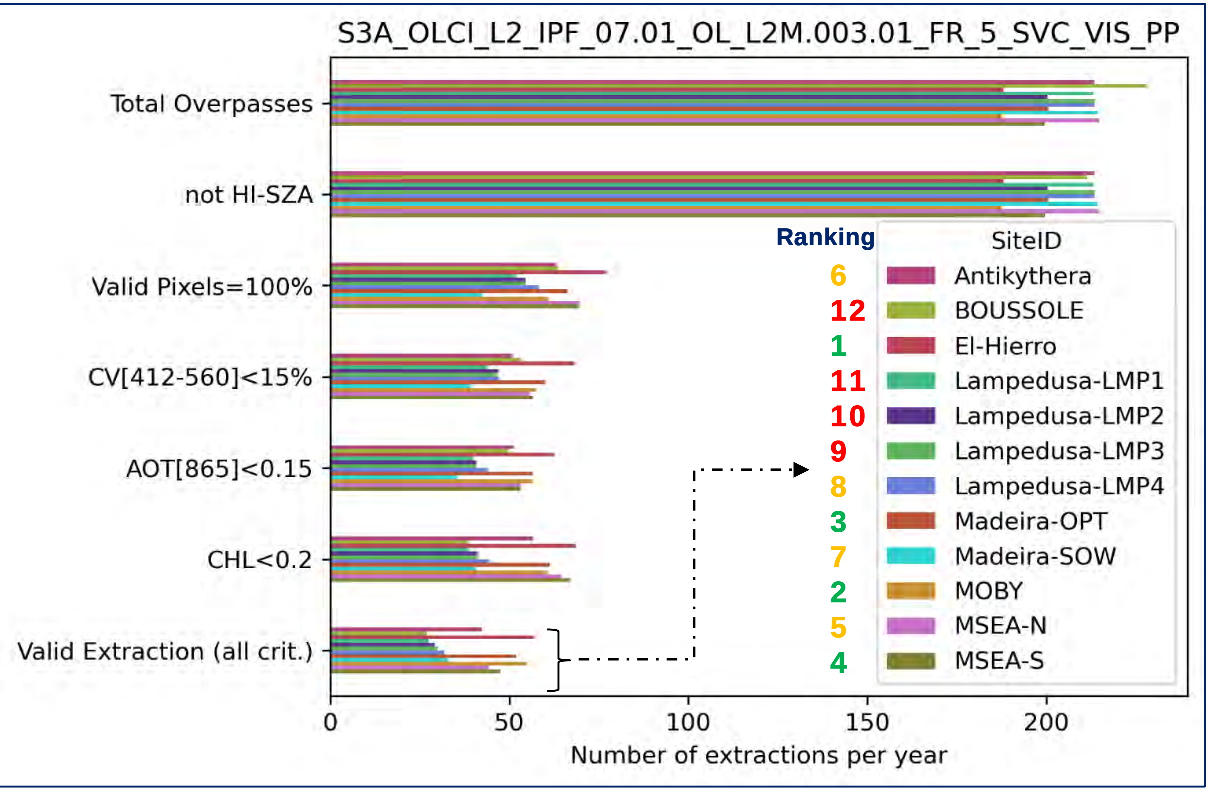
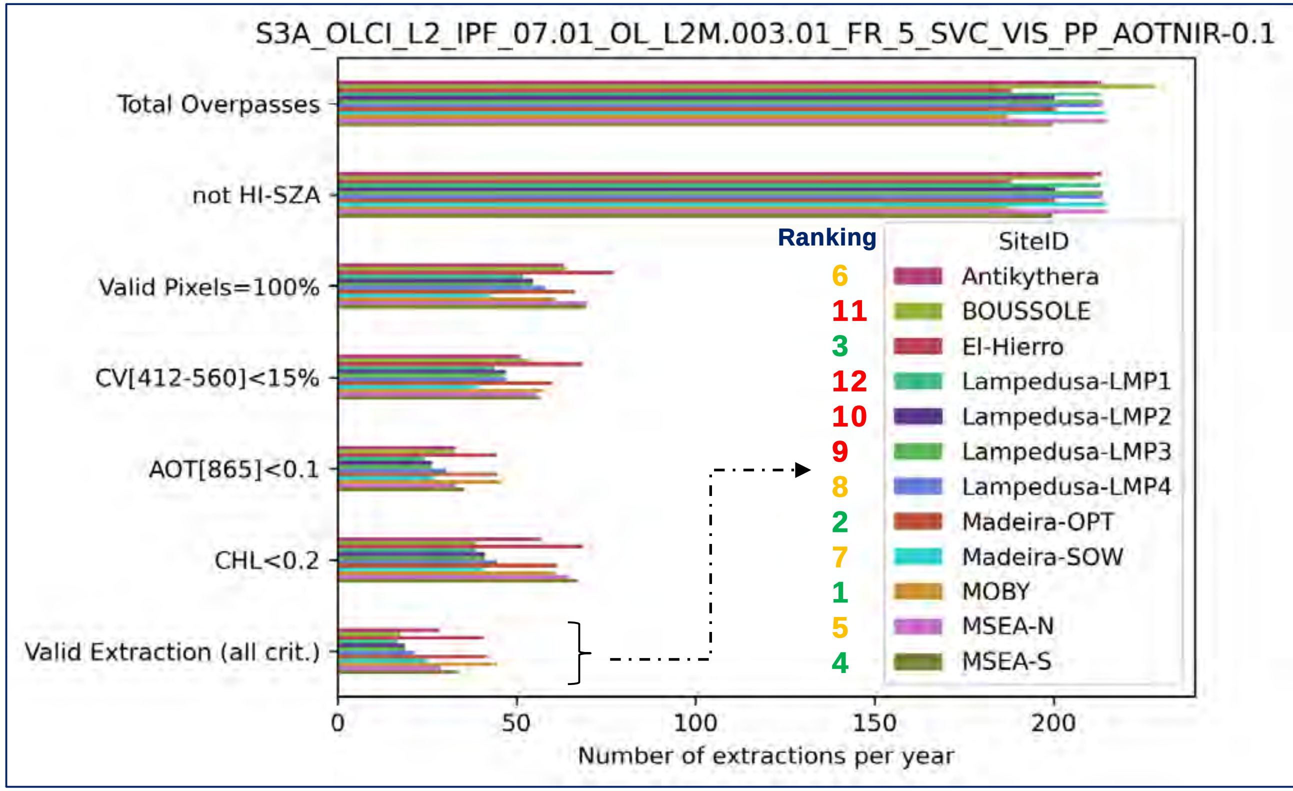
Sensitivity of the results to variations in the screening

OLCI-A

SVC_VIS_PP

Protocol **"SVC_VIS_PP_T865-0.1"**
Description: Same as SVC_VIS_PP, but
- **AOT(NIR)** < 0.1 (instead of 0.15)





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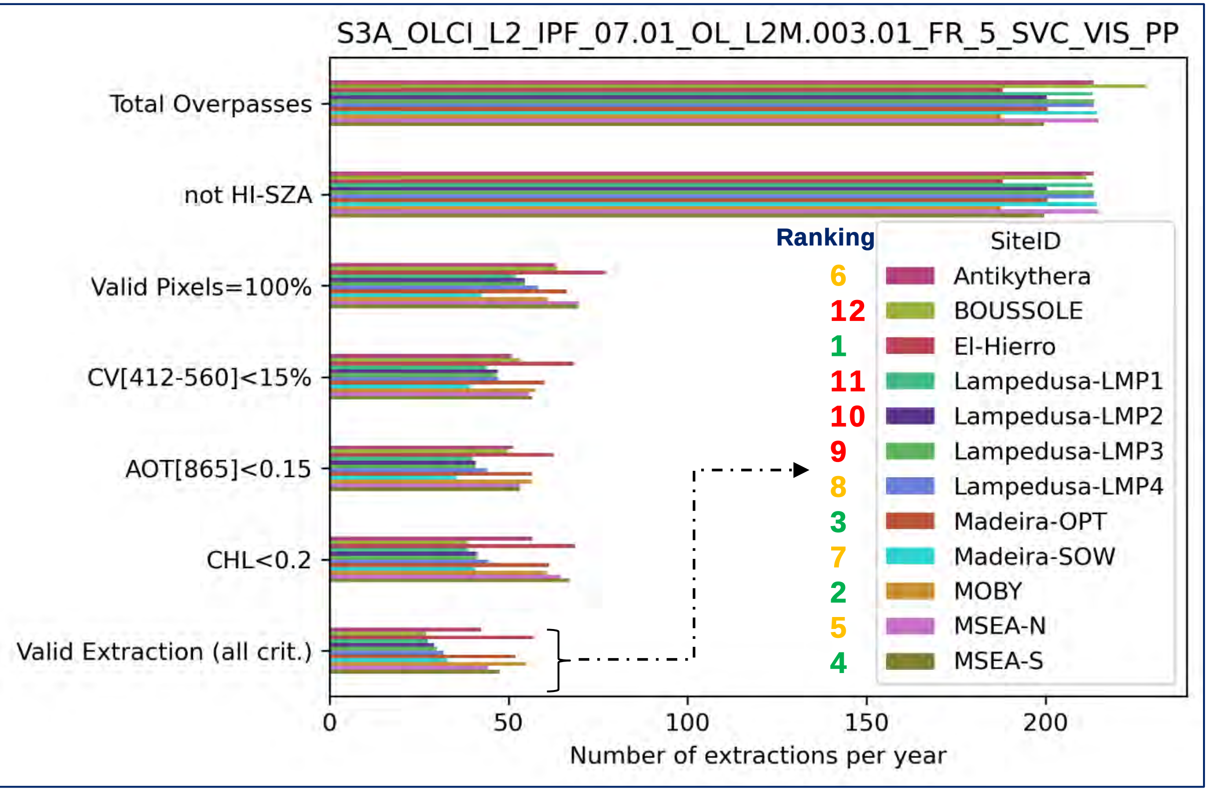
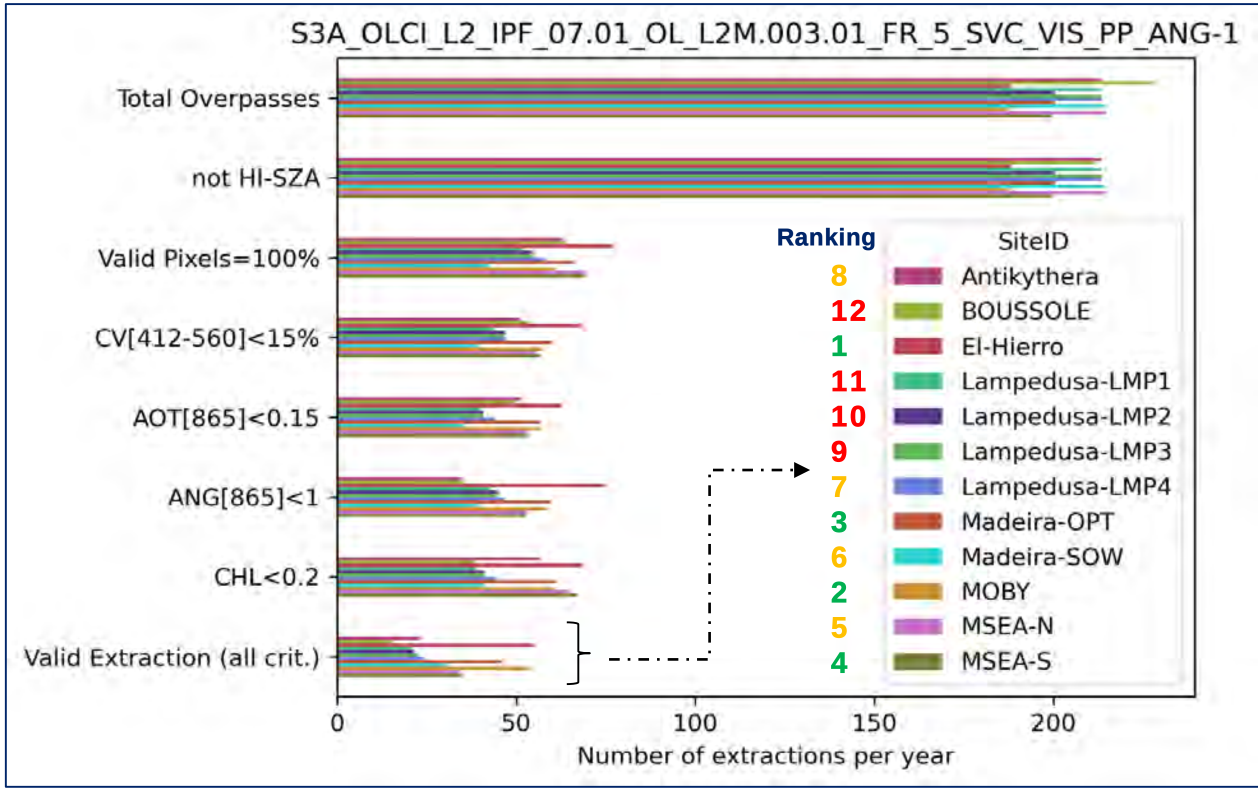
Sensitivity of the results to variations in the screening

OLCI-A

SVC_VIS_PP

Protocol **“SVC_VIS_PP_A865-1”**
Description: Same as SVC_VIS_PP, but
- **ANG(NIR)** < 1 (additional condition)



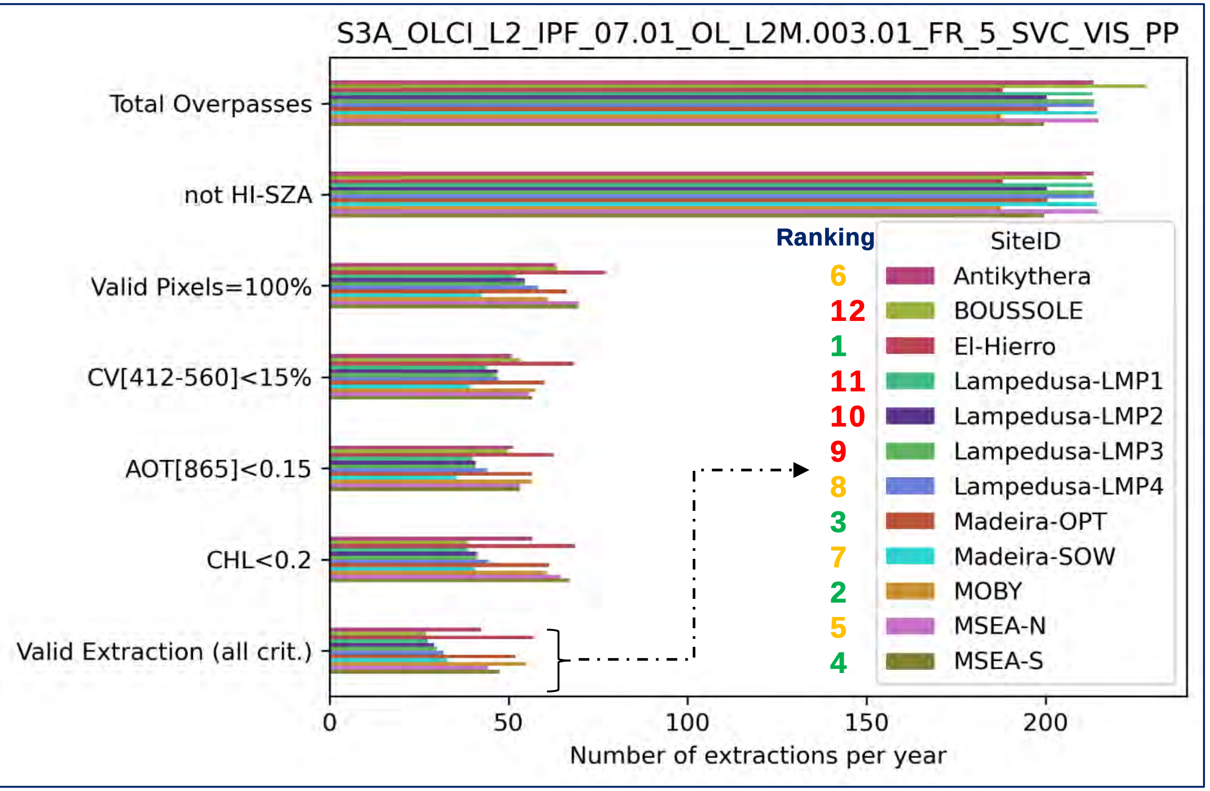


EUMETSAT

Sensitivity of the results to variations in the screening

OLCI-A

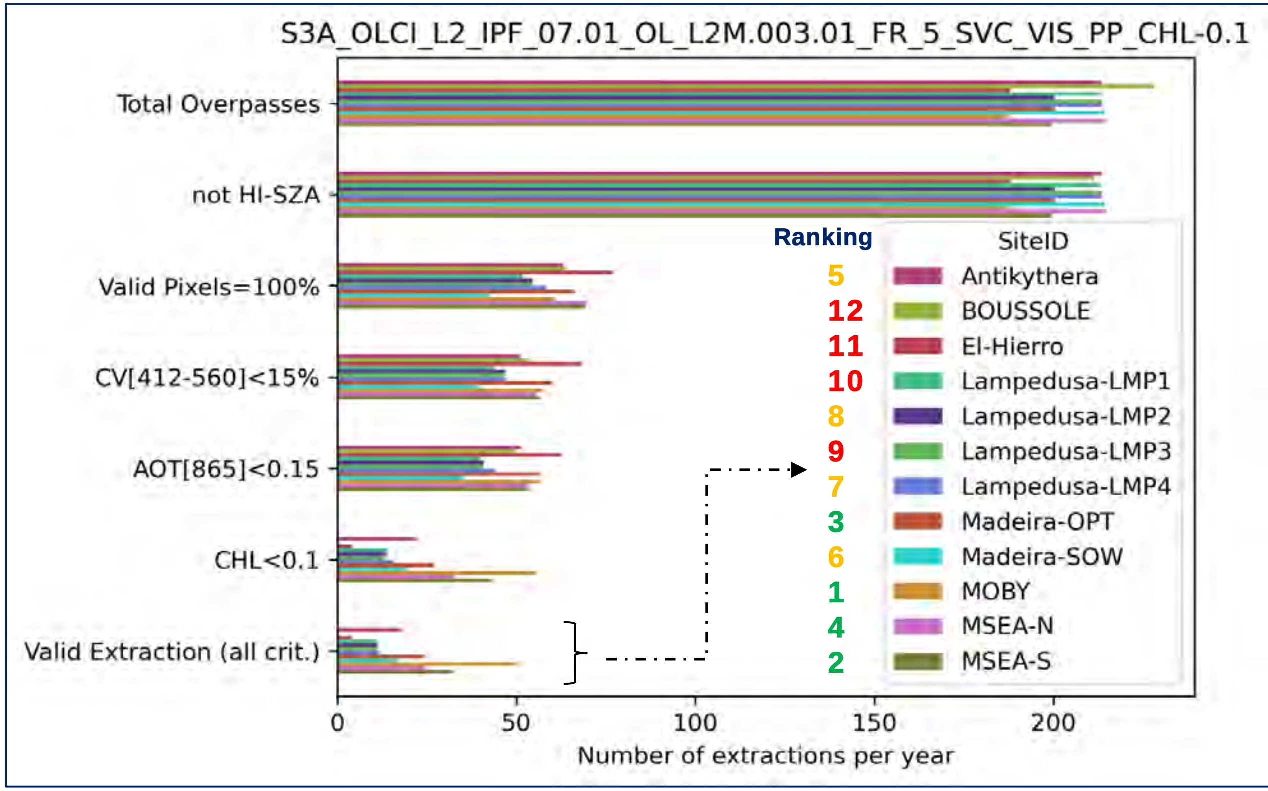
SVC_VIS_PP



Protocol **"SVC_VIS_PP_CHL-0.1"**

Description: Same as SVC_VIS_PP, but

- **CHL** < 0.1 (instead of 0.2)

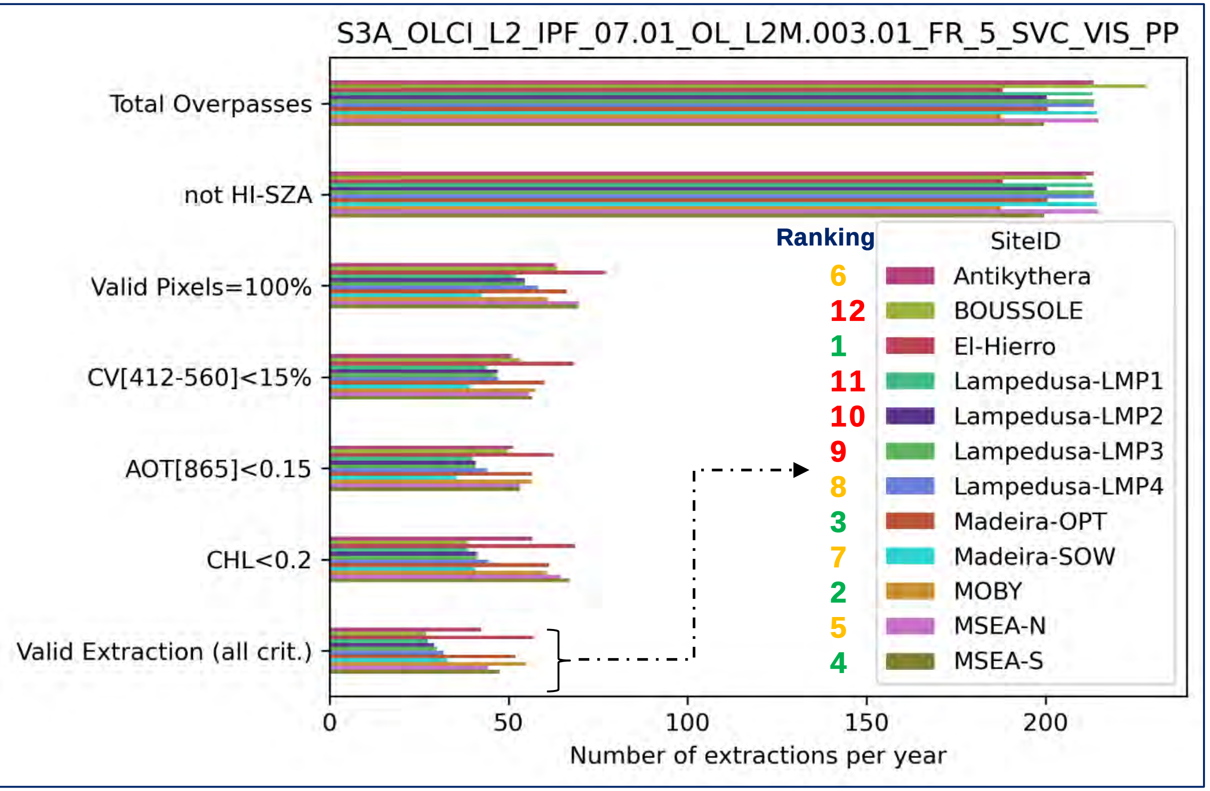


EUMETSAT

Sensitivity of the results to variations in the screening

OLCI-A

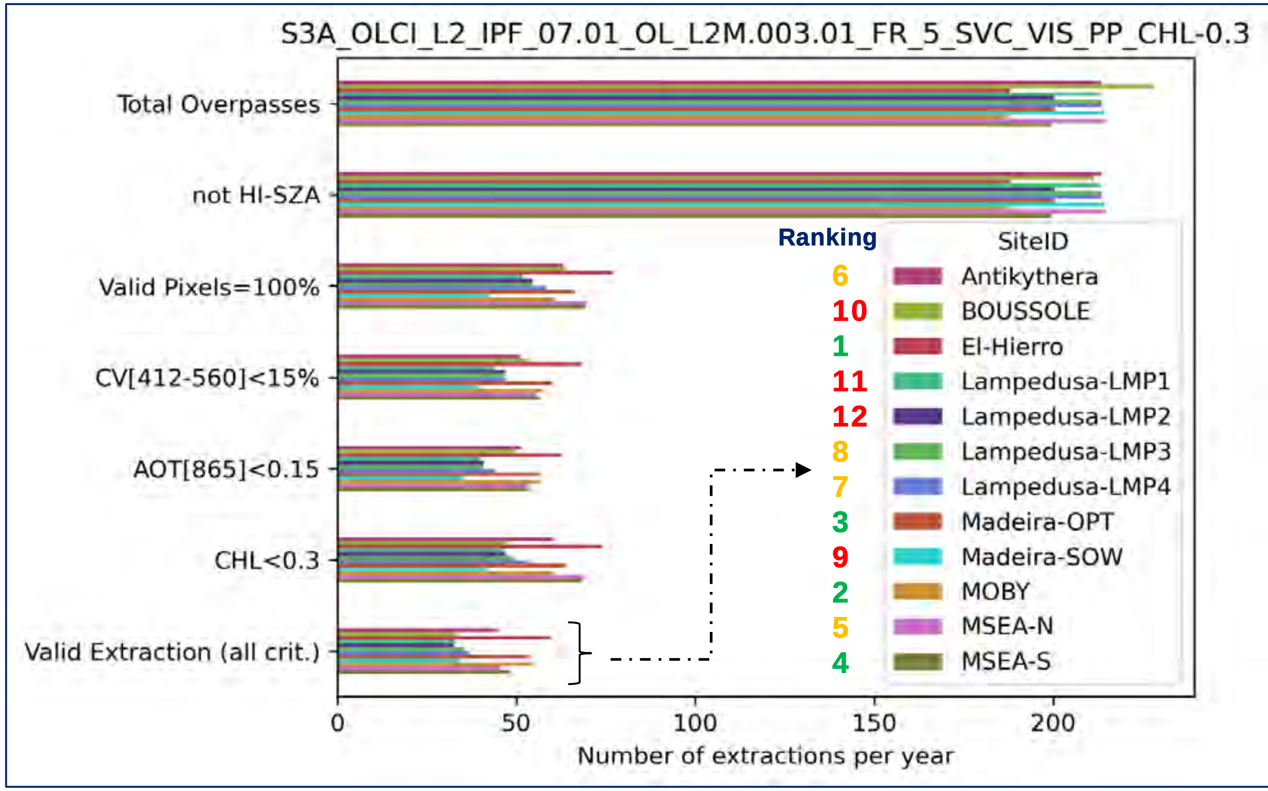
SVC_VIS_PP



Protocol **"SVC_VIS_PP_CHL-0.3"**

Description: Same as SVC_VIS_PP, but

- **CHL** < 0.3 (instead of 0.2)

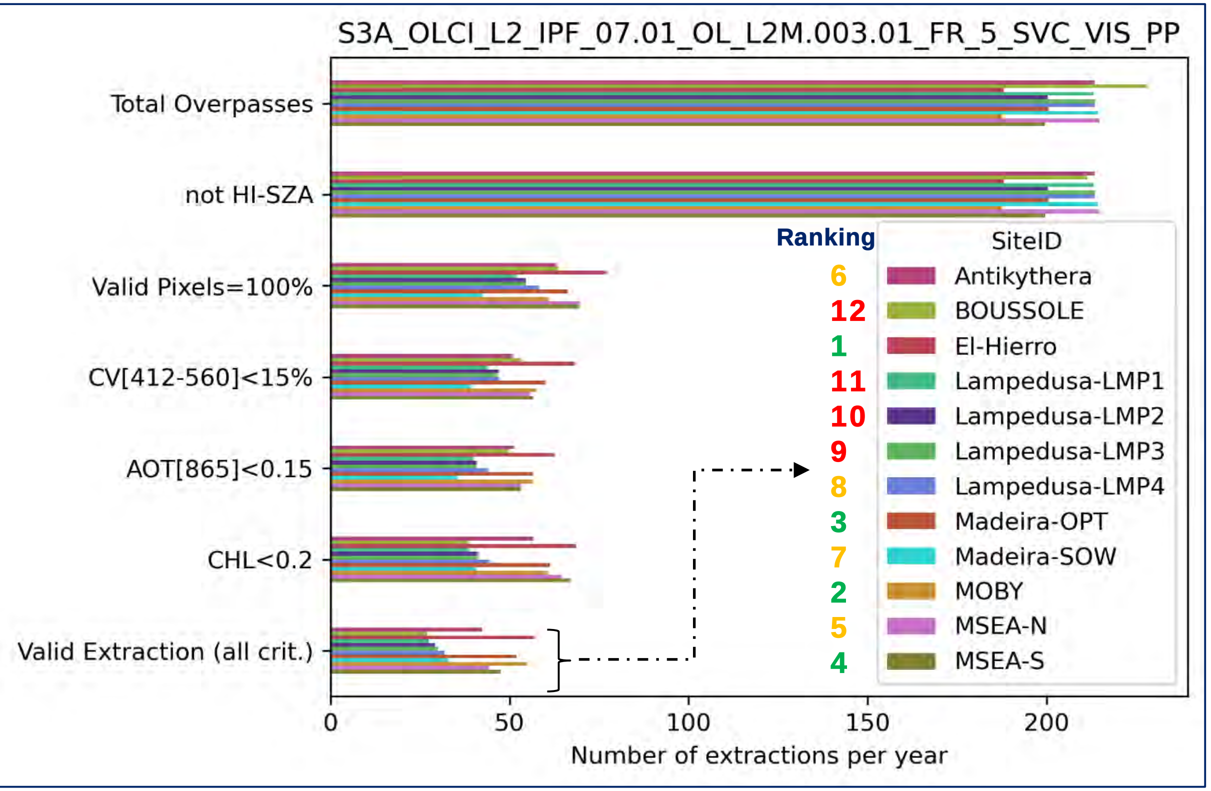


EUMETSAT

Sensitivity of the results to variations in the screening

OLCI-A

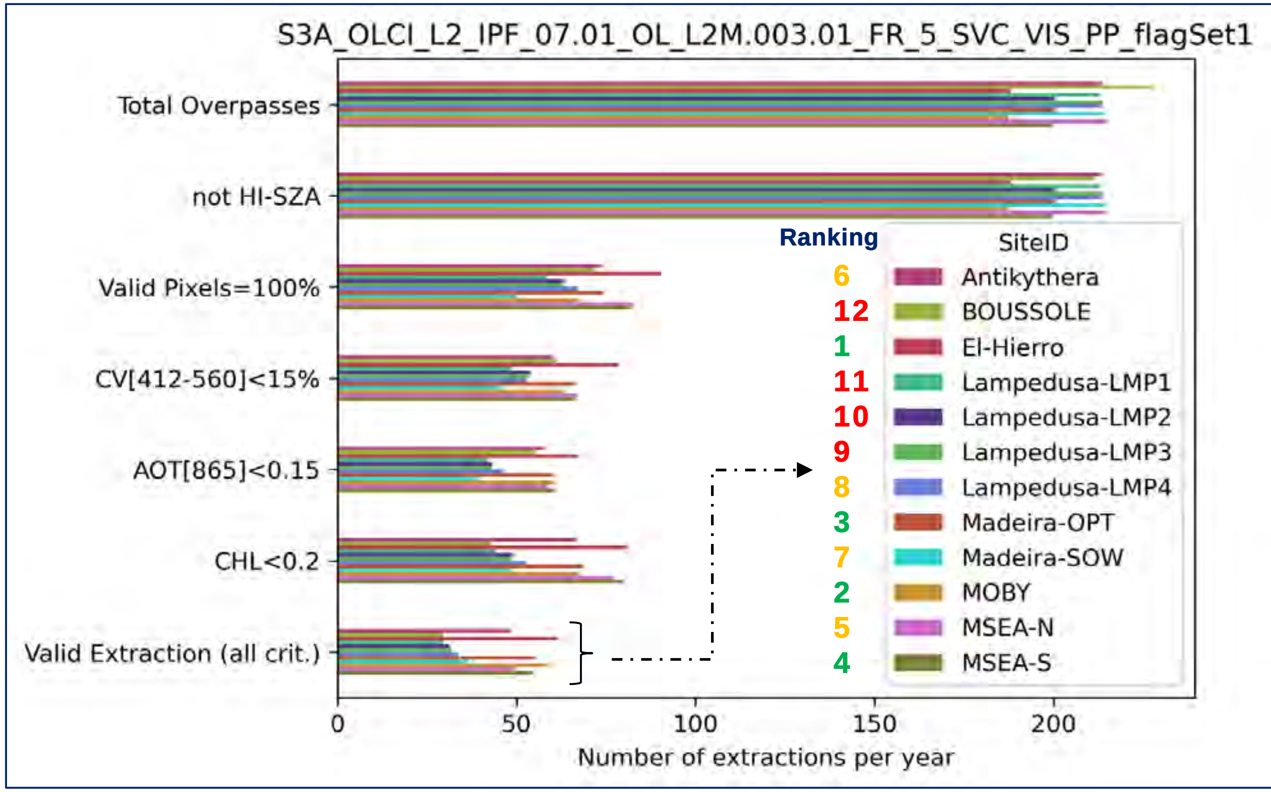
SVC_VIS_PP



Protocol **"SVC_VIS_PP_flagSet1"**

Description: Same as SVC_VIS_PP, but

- Not considering flags for: **moderate glint** and **absorbing aerosols**



EUMETSAT

Global results in seasons (OLCI-A, SVC_VIS_PP vs. SVC_VIS_PP_50)

Protocol 1: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	5.2	1.9	11.8	1.5	1.3	1.9	2.3	8.7	4.1	12.6	5.6	6.4
MAM	8.7	2.1	14.7	6.9	7.3	7.1	7.5	12	7.9	13.9	8.9	9.7
JJA	18.6	13.1	15.3	11.8	10.8	11.4	12.9	17.6	10.6	14.3	19.1	18.7
SON	9.9	9.9	15.3	7.3	9.6	9.4	9.1	13.5	10.2	14.3	10.6	12.8
Yearly	**42.3**	**27**	**57**	**27.6**	**29.1**	**29.9**	**31.8**	**51.8**	**32.9**	**55.1**	**44.3**	**47.5**

Variation in the protocol: SVC_VIS_PP_50

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	8.1	2.5	13.3	2.1	2.1	2.7	3.1	10.8	7.0	16.0	7.9	8.1
MAM	9.5	2.1	15.8	8.1	8.3	7.9	7.9	13.1	9.1	14.5	10.6	9.9
JJA	18.9	14.1	15.6	12.7	12.1	12.3	13.1	18.7	11.2	15.7	19.5	19.5
SON	11.4	12.7	16.2	9.8	11.0	11.2	10.0	15.8	12.4	17.2	12.4	13.9
Yearly	**48.0**	**31.5**	**61.0**	**32.8**	**33.6**	**34.1**	**34.1**	**58.6**	**39.6**	**63.4**	**50.4**	**51.4**

NB: Variations of the protocols do not typically change the seasonality performance patterns

Global results in seasons (OLCI-B, SVC_VIS_PP vs. SVC_VIS_PP_50)

Protocol 1: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	4.8	1.6	10.2	2.9	1.9	2.9	1.6	8.1	5.5	16.6	6.1	7.4
MAM	10.0	1.3	14.7	8.0	8.9	8.6	8.6	12.3	7.1	15.0	12.0	11.0
JJA	21.3	13.9	13.8	12.5	8.3	12.8	10.5	17.8	13.6	13.4	21.0	18.4
SON	11.6	8.7	13.8	7.0	8.6	8.3	6.7	13.0	9.1	13.8	12.3	12.9
Yearly	**47.8**	**25.6**	**52.5**	**30.4**	**27.8**	**32.6**	**27.5**	**51.2**	**35.3**	**58.8**	**51.4**	**49.8**

Variation in the protocol: SVC_VIS_PP_50

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	7.1	1.6	13.8	4.2	2.2	3.2	2.9	12.0	7.8	19.2	7.4	10.3
MAM	10.0	1.6	15.7	8.0	8.9	9.9	8.6	14.2	8.1	15.4	13.3	11.6
JJA	21.3	14.9	14.4	12.8	9.3	12.8	10.9	18.1	14.9	16.0	22.6	18.7
SON	12.9	9.7	15.7	8.6	8.9	11.8	8.0	15.9	12.0	17.3	12.9	13.9
Yearly	**51.3**	**27.8**	**59.5**	**33.6**	**29.4**	**37.7**	**30.4**	**60.2**	**42.7**	**67.8**	**56.2**	**54.6**

NB: Variations of the protocols do not typically change the seasonality performance patterns

Global results in seasons (MODISA, SVC_VIS_PP vs. SVC_VIS_PP_50)

Protocol 1: SVC_VIS_PP

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	4.0	4.4	6.2	1.8	1.0	1.0	1.6	5.8	4.6	12.6	7.0	5.8
MAM	14.6	3.0	6.8	7.4	10.2	4.6	9.8	4.4	7.0	5.6	15.0	13.8
JJA	29.4	11.4	5.4	11.2	15.4	8.6	17.8	9.0	9.4	4.0	31.6	25.0
SON	16.2	6.8	7.8	7.4	9.2	9.0	9.4	8.4	8.4	8.0	16.4	17.6
Yearly	**64.2**	**25.6**	**26.2**	**27.8**	**35.8**	**23.2**	**38.6**	**27.6**	**29.4**	**30.2**	**70.0**	**62.2**

Variation in the protocol: SVC_VIS_PP_50

Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	5.4	5.4	10.4	2.6	1.2	1.4	2.4	8.6	8.4	20.0	9.0	9.0
MAM	16.0	3.2	11.0	12.8	12.0	9.4	11.4	7.8	10.4	10.0	18.0	14.8
JJA	33.0	14.2	8.0	18.0	18.8	17.2	19.8	13.6	13.2	7.6	32.8	26.0
SON	19.6	8.0	12.8	12.4	12.6	14.8	12.4	12.4	12.6	12.6	18.6	20.8
Yearly	**74.0**	**30.8**	**42.2**	**45.8**	**44.6**	**42.8**	**46.0**	**42.4**	**44.6**	**50.2**	**78.5**	**70.6**

NB: Variations of the protocols do not typically change the seasonality performance patterns

Global results in seasons (VSNPP, SVC_VIS_PP vs. SVC_VIS_PP_50)

Protocol 1: SVC_VIS_PP

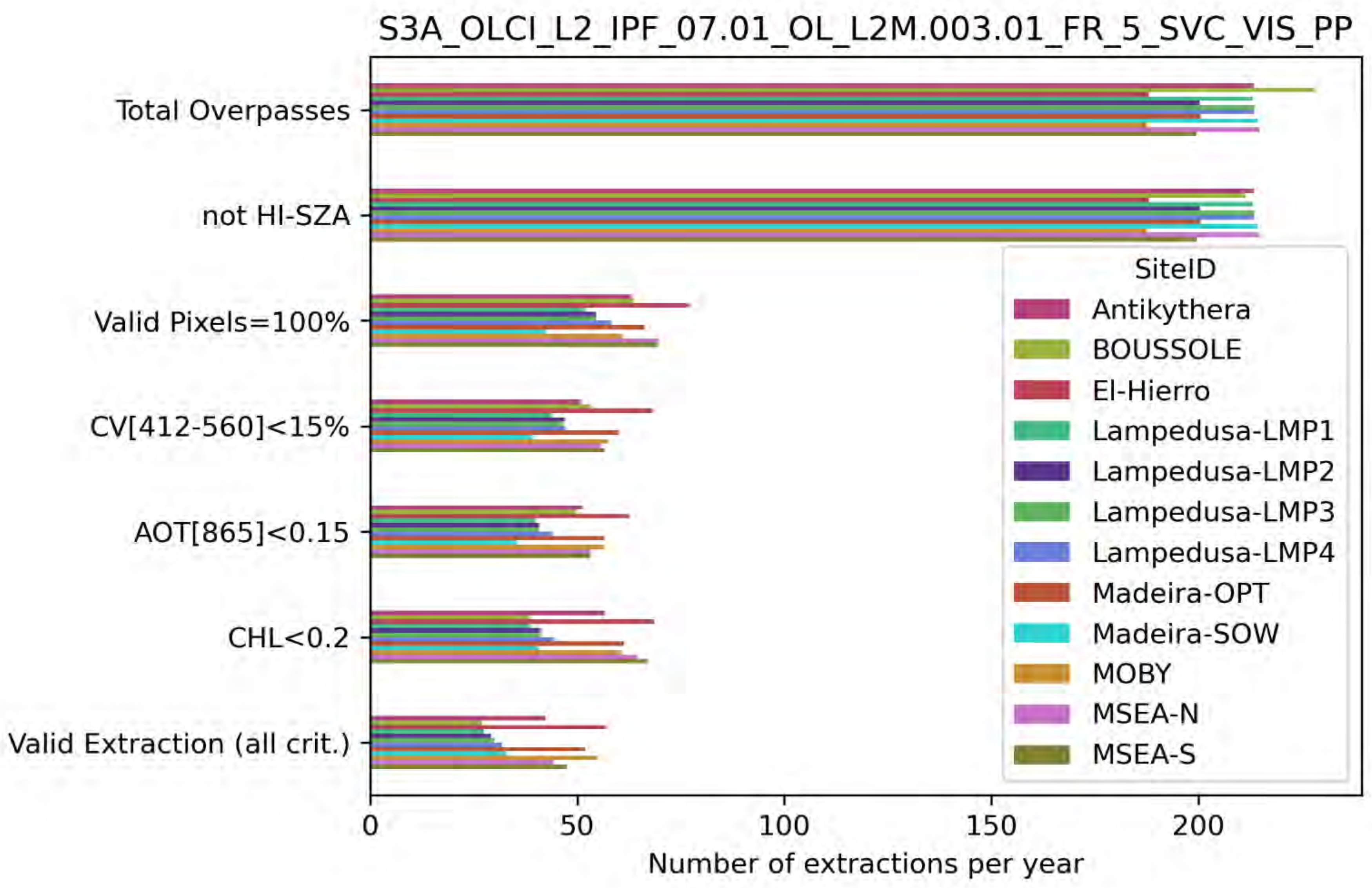
Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	10.9	4.4	9.9	2.1	2.1	2.3	4.5	8.0	4.4	15.9	10.0	7.0
MAM	12.5	2.5	6.3	9.1	10.5	7.3	8.8	5.6	6.0	7.8	10.5	10.3
JJA	28.4	23.8	8.5	17.3	18.6	15.9	18.0	9.0	8.3	4.9	24.4	20.4
SON	18.5	18.5	7.5	10.4	9.4	9.5	8.0	8.9	8.0	11.1	17.3	17.6
Yearly	**70.3**	**49.1**	**32.1**	**38.9**	**40.6**	**34.9**	**39.3**	**31.5**	**26.6**	**39.6**	**62.1**	**55.3**

Variation in the protocol : SVC_VIS_PP_50

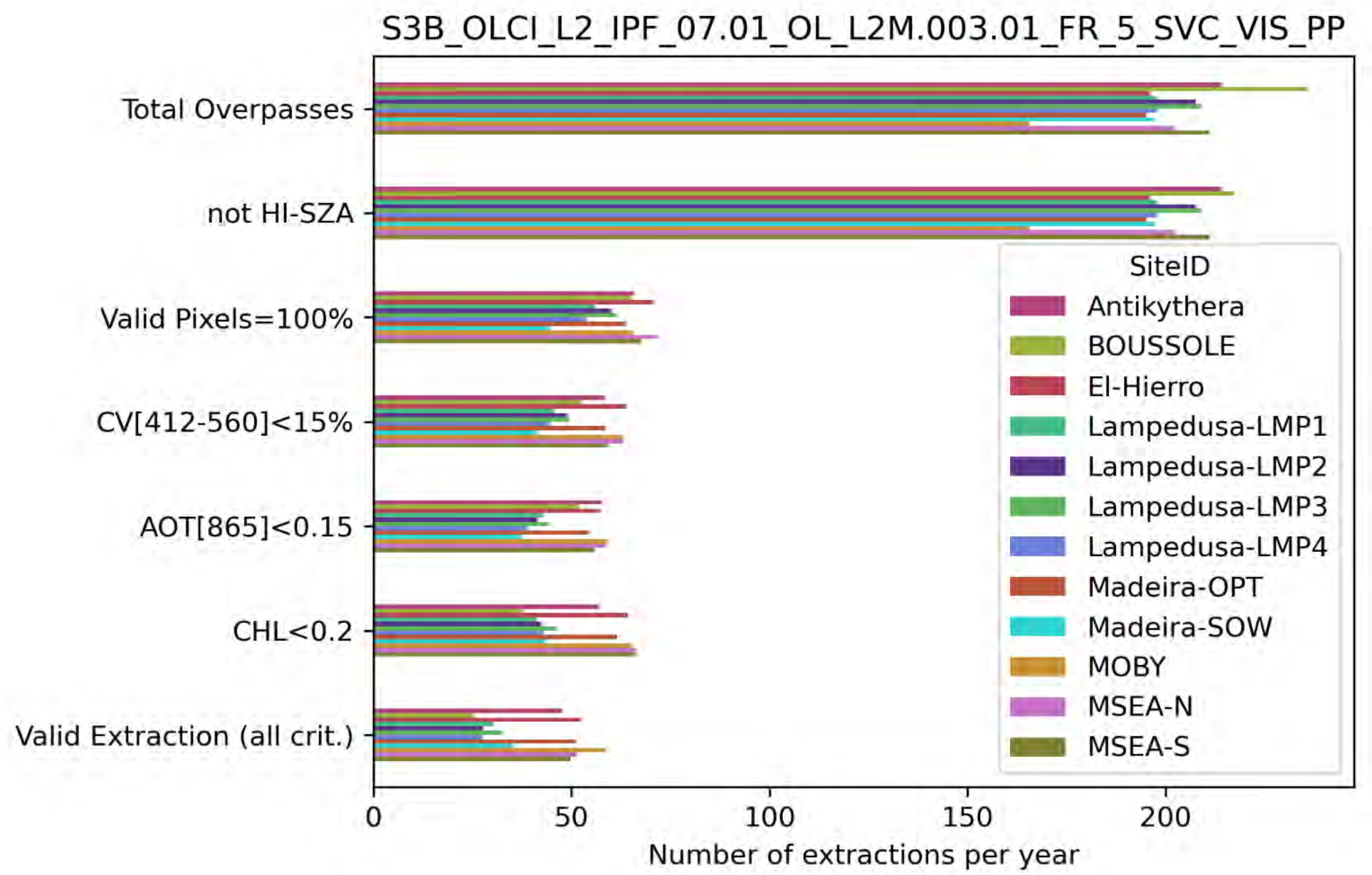
Seasons/Sites	Mean number of valid extractions											
	Antikythera	BOUSSOLE	El-Hierro	LMP1	LMP2	LMP3	LMP4	Madeira-OPT	Madeira-SOW	MOBY	MSEA-N	MSEA-S
DJF	14.9	6.0	14.4	2.4	2.5	2.4	5.8	13.0	8.6	24.4	13.8	10.4
MAM	16.9	3.3	9.5	12.8	13.0	11.3	11.5	10.1	8.4	12.1	15.5	13.3
JJA	36.3	30.1	13.4	23.9	24.6	23.8	23.4	13.9	12.4	9.3	31.1	26.3
SON	23.1	23.5	13.1	13.5	13.4	12.9	11.4	13.0	13.1	15.5	22.4	23.3
Yearly	**91.2**	**62.9**	**50.4**	**52.5**	**53.5**	**50.3**	**52.0**	**50.0**	**42.5**	**61.3**	**82.8**	**73.1**

NB: Variations of the protocols do not typically change the seasonality performance patterns

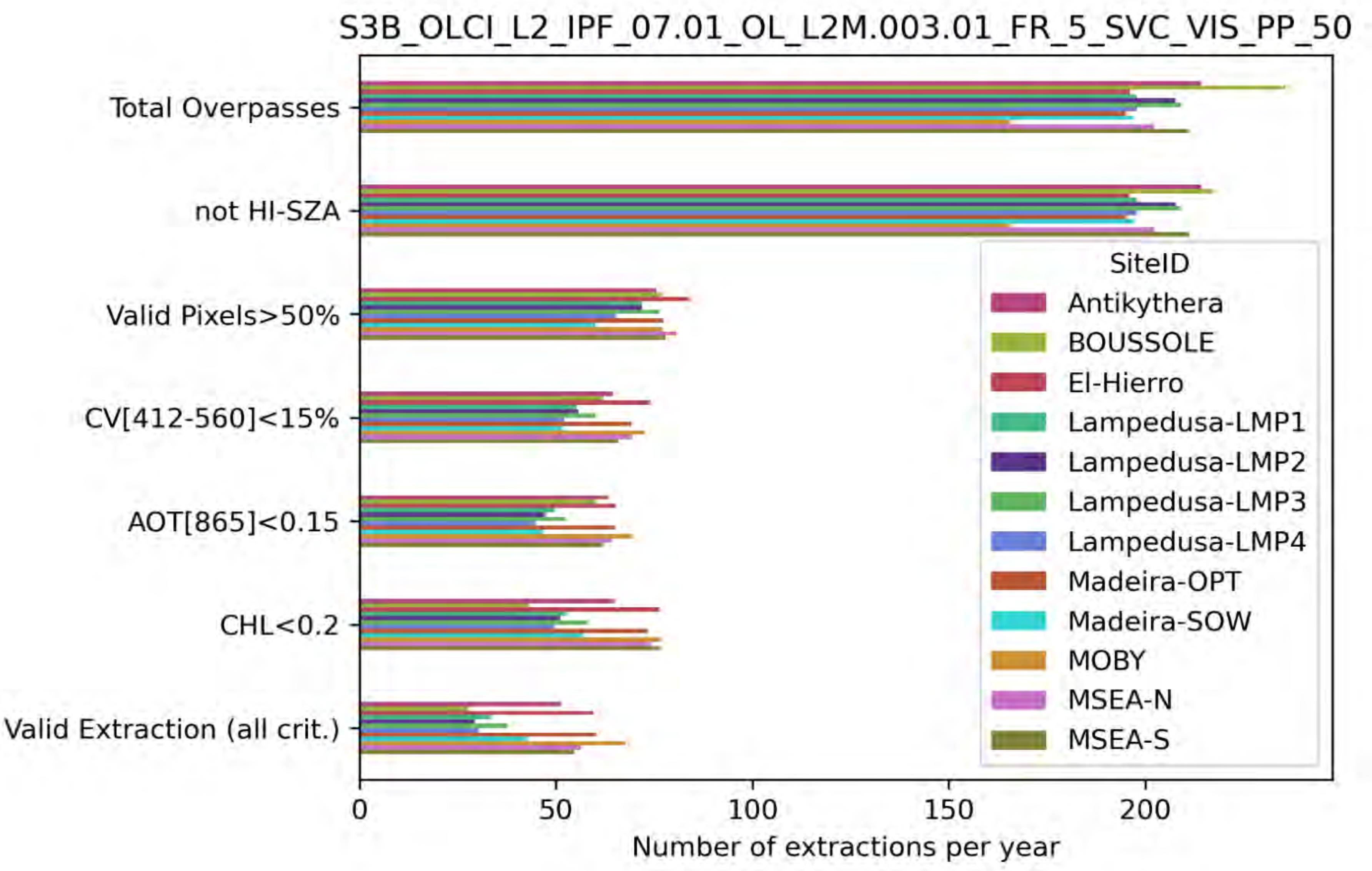
OLCI-A


S3A_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP
Total Overpasses
not HI-SZA
Valid Pixels=100%
CV[412-560]<15%
AOT[865]<0.15
CHL<0.2
Valid Extraction (all crit.)
0
50
100
150
200
Number of extractions per year
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

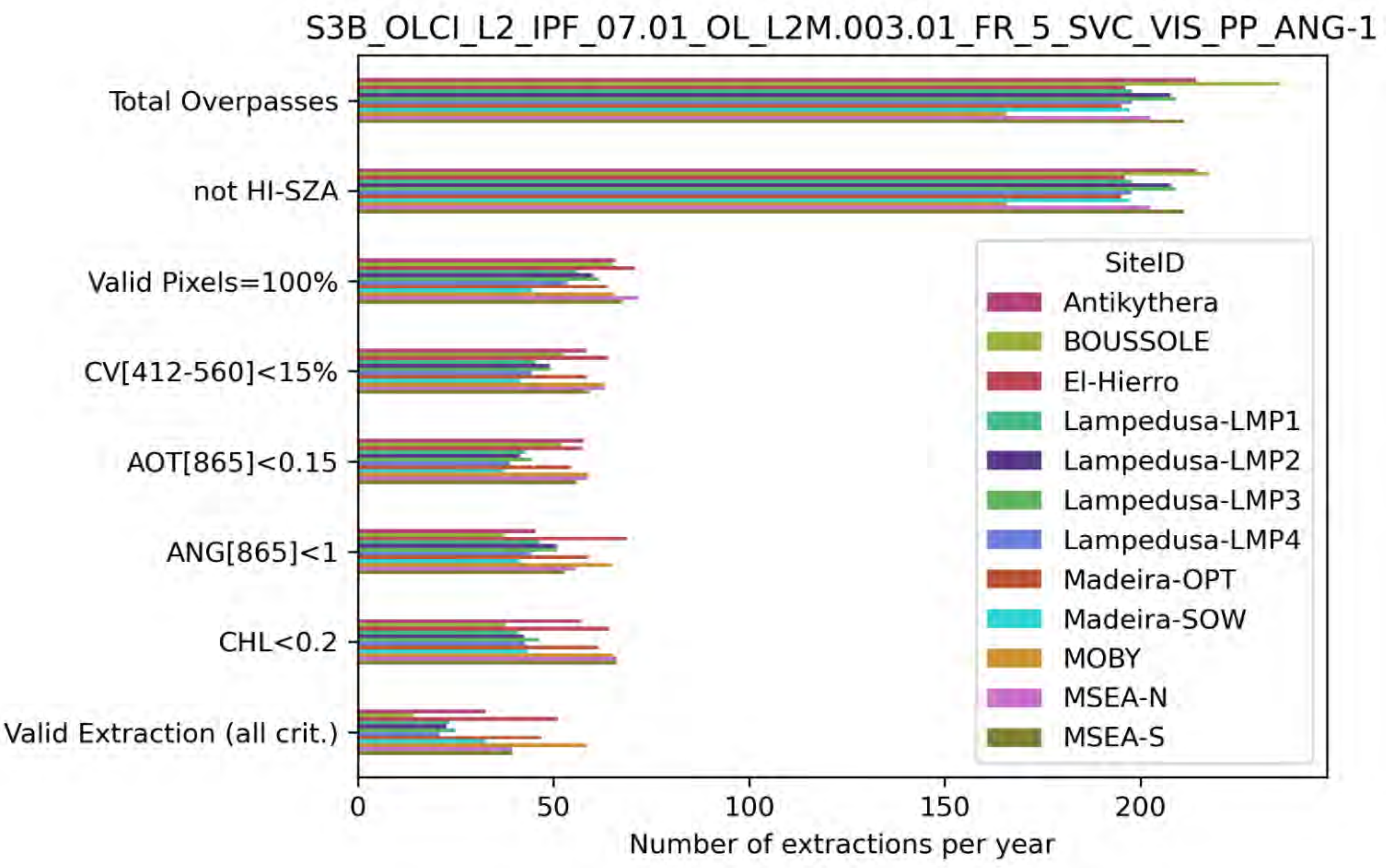
OLCI-B


S3B_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP
Total Overpasses
not HI-SZA
Valid Pixels=100%
CV[412-560]<15%
AOT[865]<0.15
CHL<0.2
Valid Extraction (all crit.)
0
50
100
150
200
Number of extractions per year
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

OLCI-B

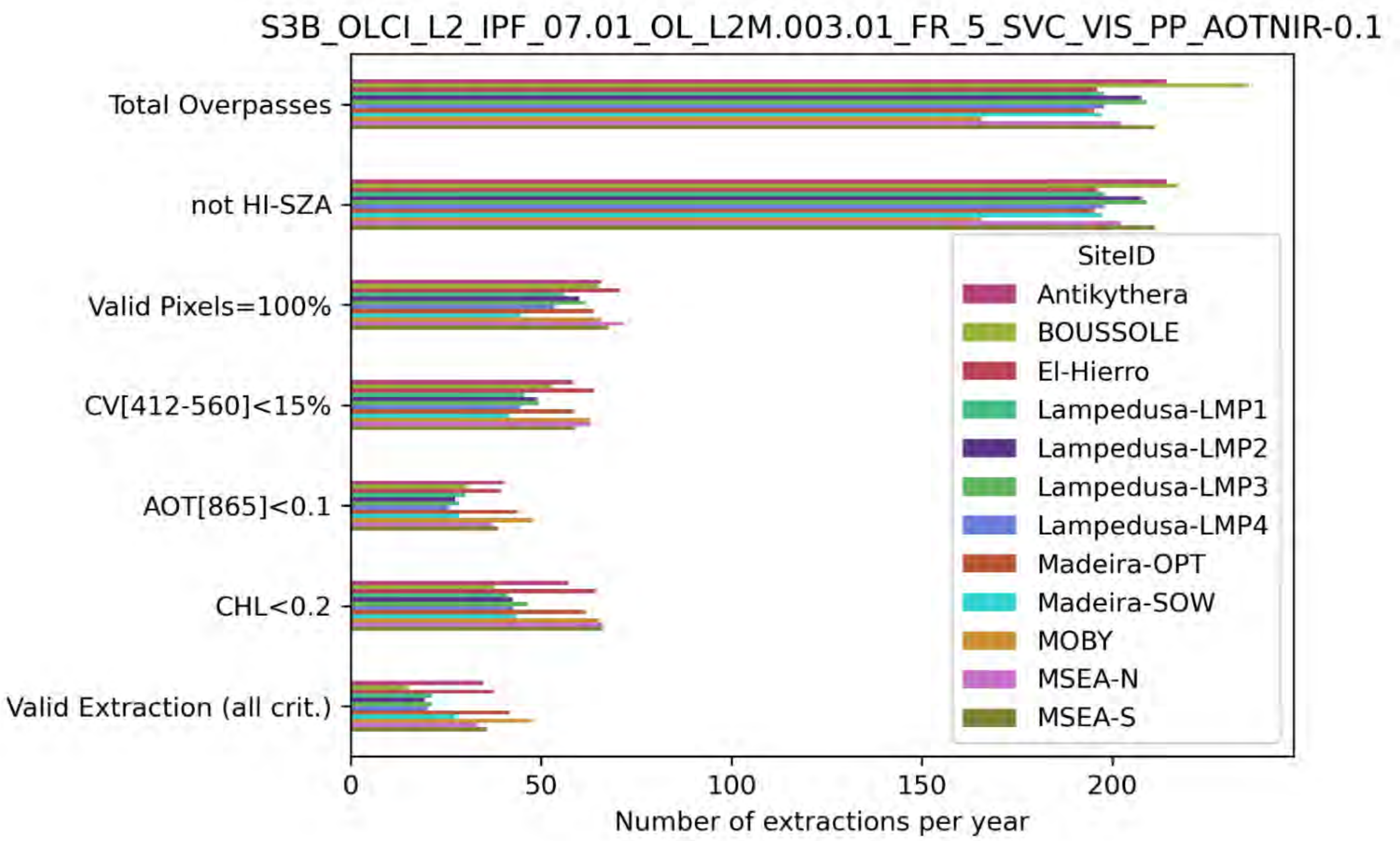

S3B_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP_50
Total Overpasses
not HI-SZA
Valid Pixels>50%
CV[412-560]<15%
AOT[865]<0.15
CHL<0.2
Valid Extraction (all crit.)
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S
0
50
100
150
200
Number of extractions per year

OLCI-B



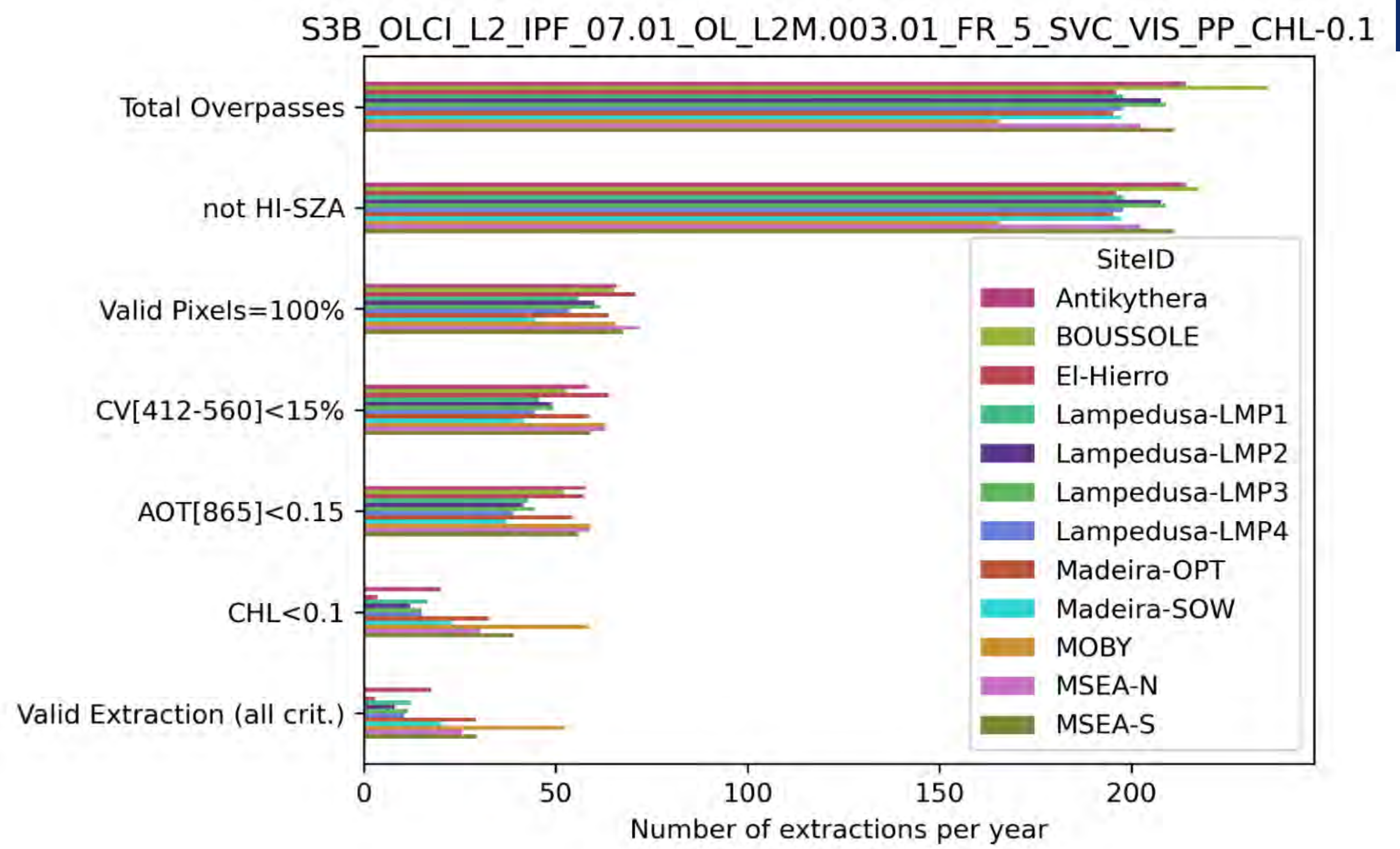
EUMETSAT

OLCI-B



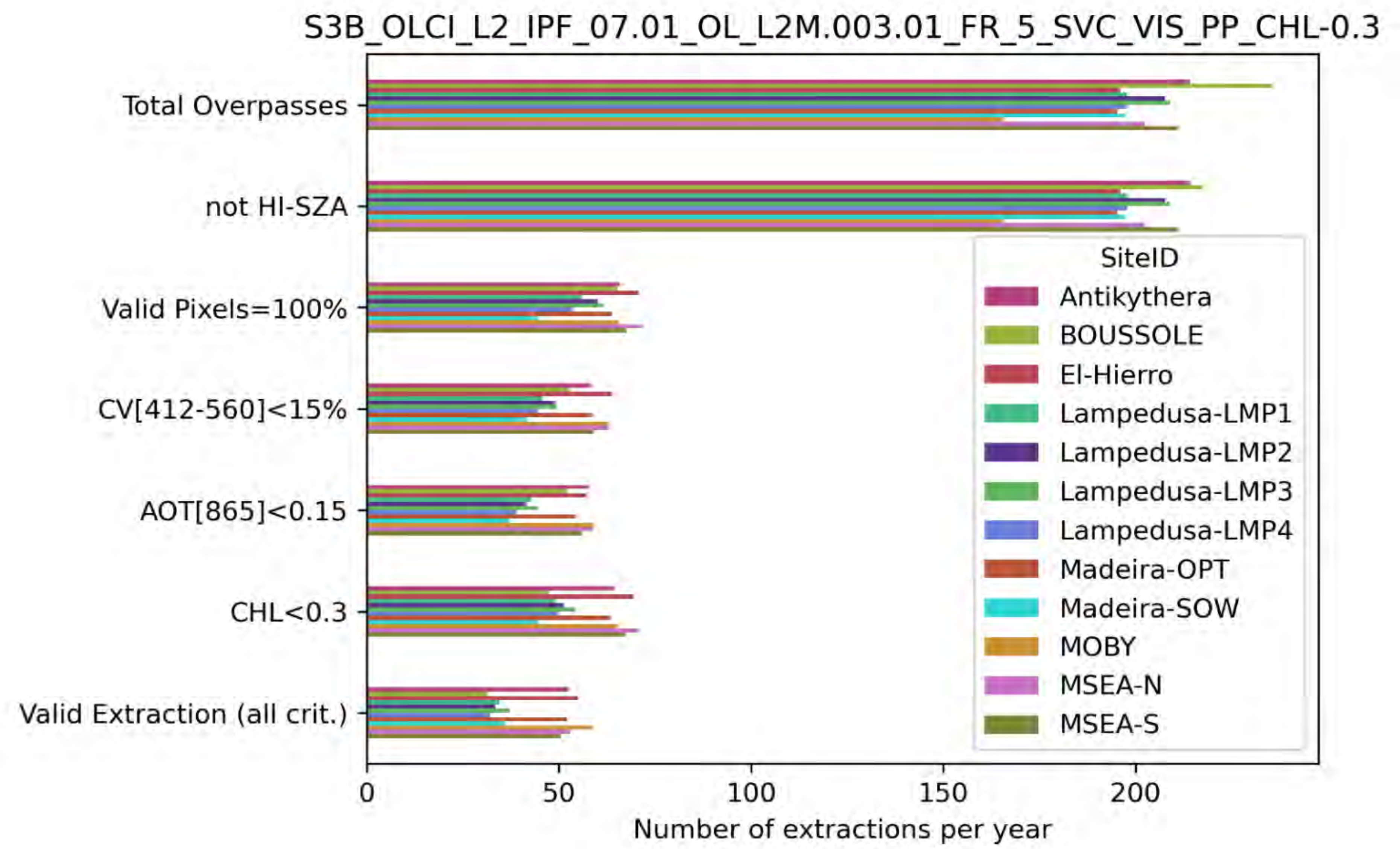
S3B_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP_AOTNIR-0.1
Total Overpasses
not HI-SZA
Valid Pixels=100%
CV[412-560]<15%
AOT[865]<0.1
CHL<0.2
Valid Extraction (all crit.)
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S
0
50
100
150
200
Number of extractions per year

OLCI-B

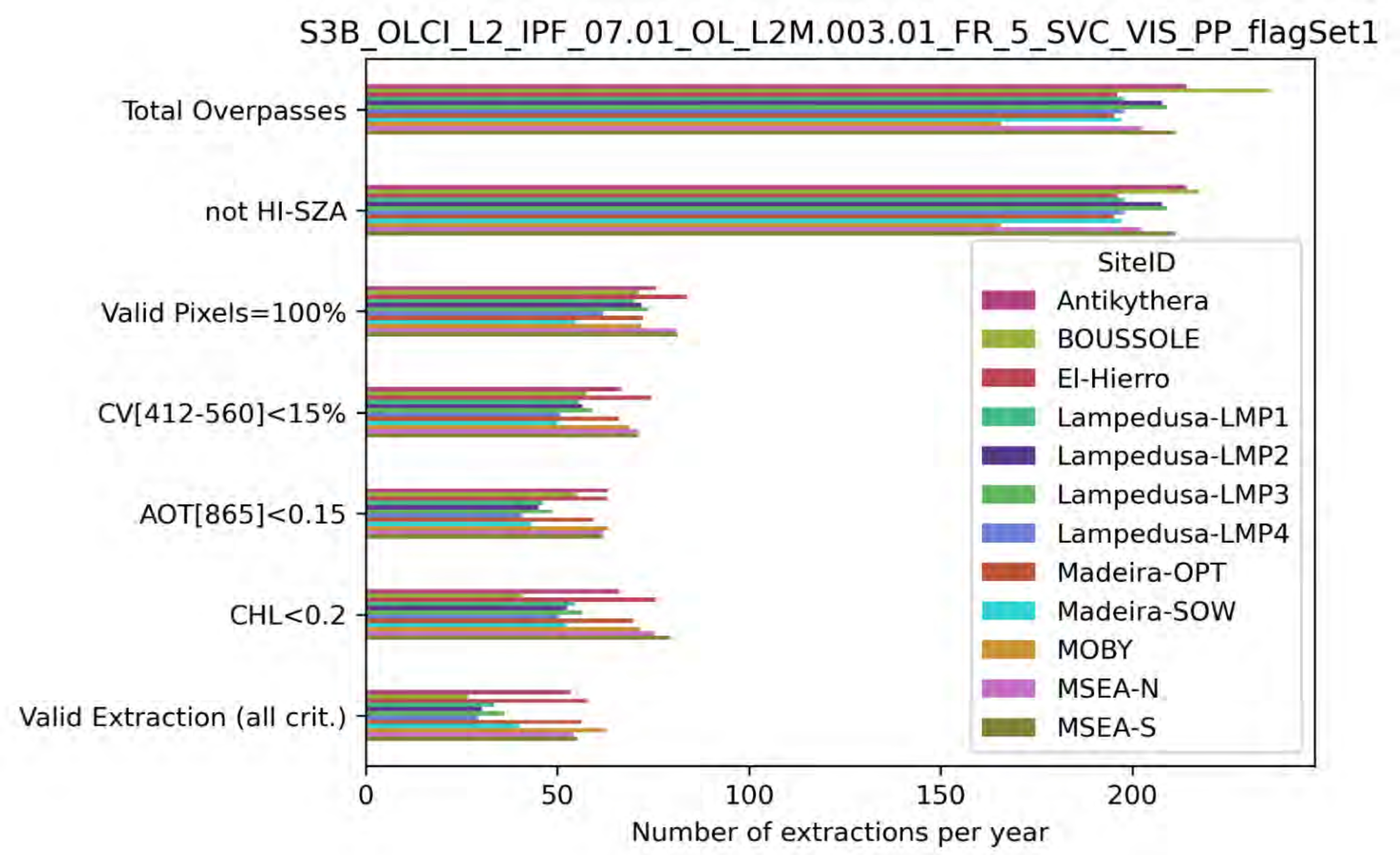


EUMETSAT

OLCI-B

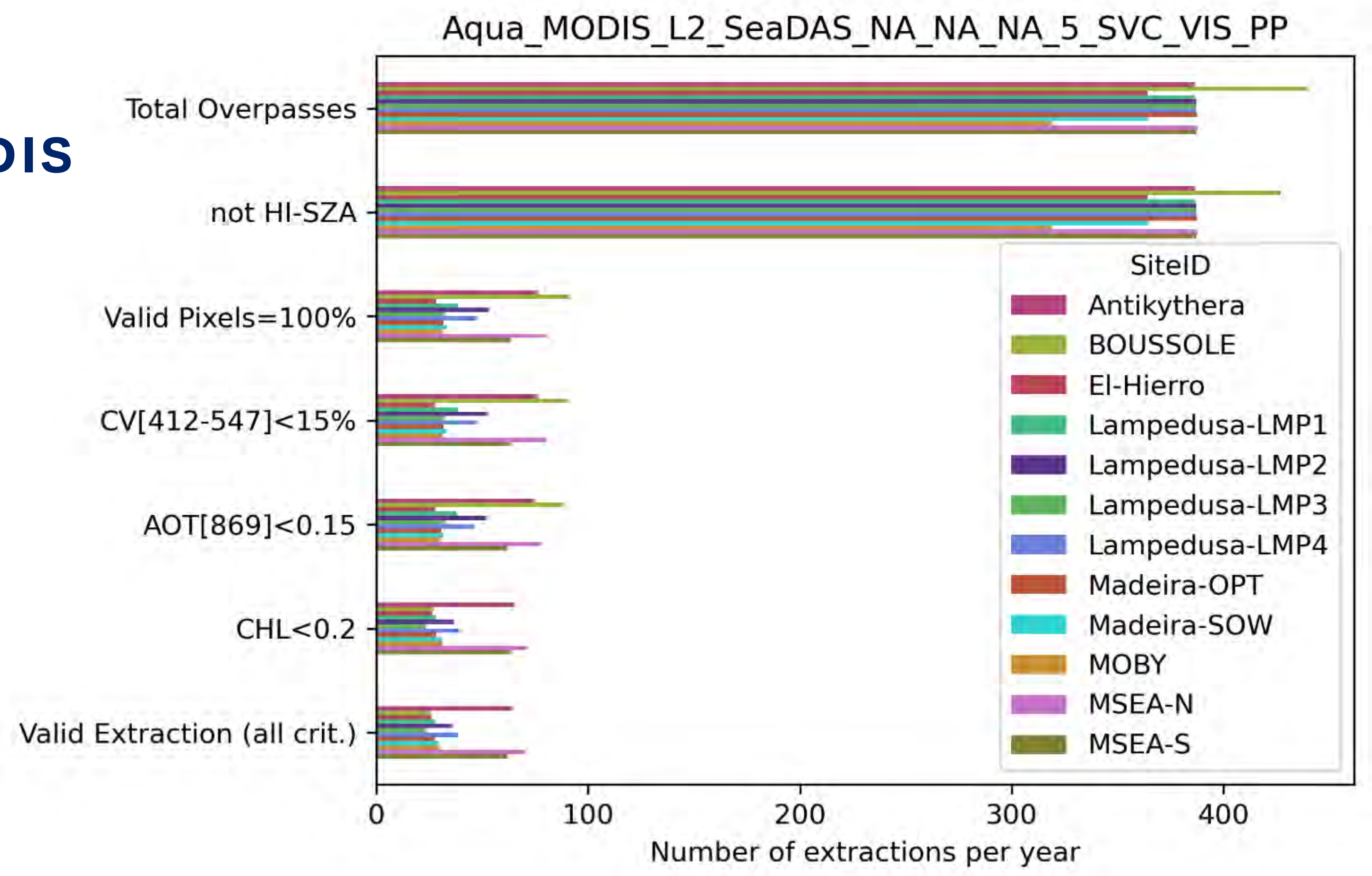

S3B_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP_CHL-0.3
Total Overpasses
not HI-SZA
Valid Pixels=100%
CV[412-560]<15%
AOT[865]<0.15
CHL<0.3
Valid Extraction (all crit.)
0
50
100
150
200
Number of extractions per year
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

OLCI-B



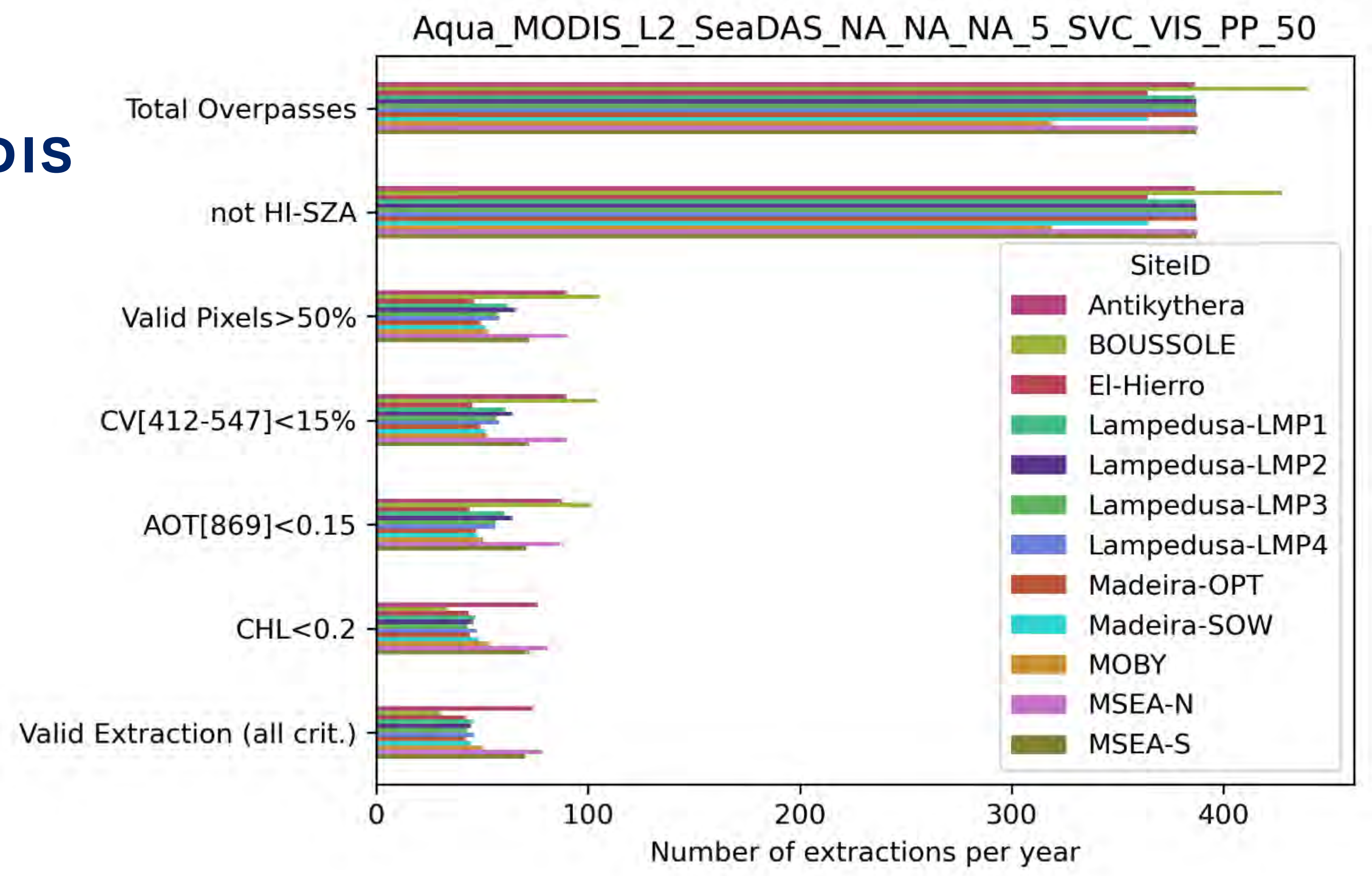
EUMETSAT

Aqua-MODIS



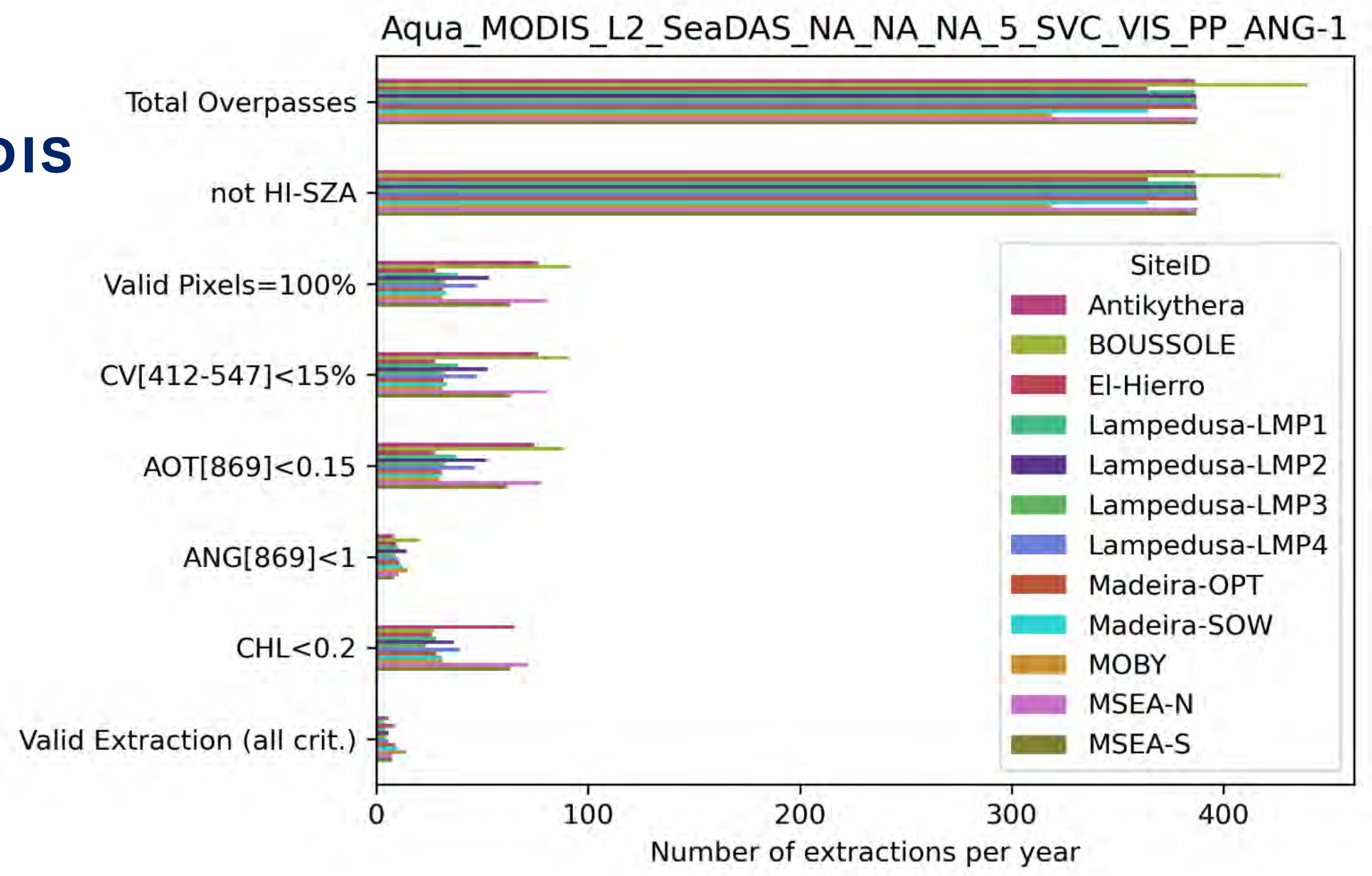
EUMETSAT

Aqua-MODIS



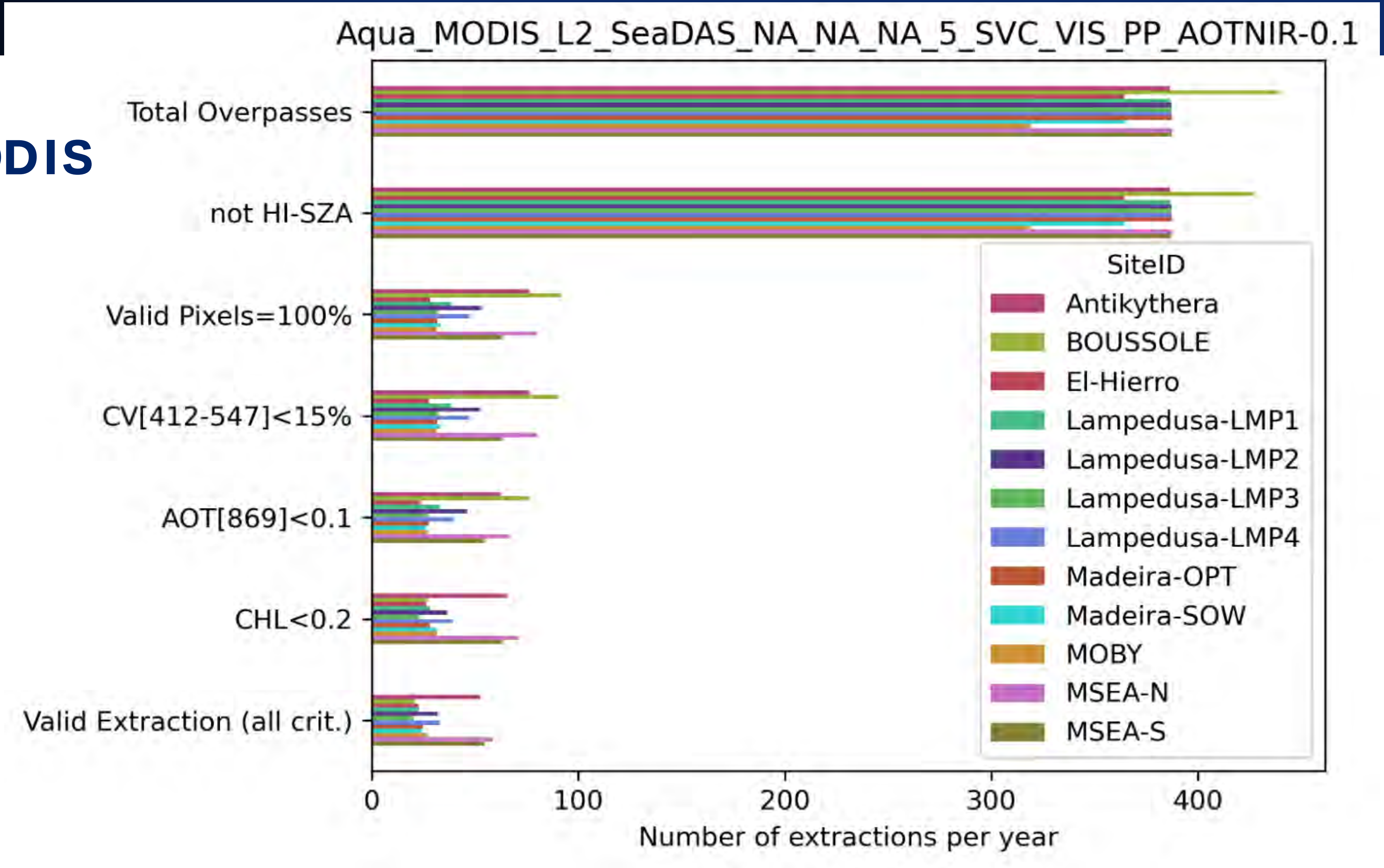
Aqua_MODIS_L2_SeaDAS_NA_NA_NA_5_SVC_VIS_PP_50
Total Overpasses
not HI-SZA
Valid Pixels>50%
CV[412-547]<15%
AOT[869]<0.15
CHL<0.2
Valid Extraction (all crit.)
0
100
200
300
400
Number of extractions per year
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

Aqua-MODIS



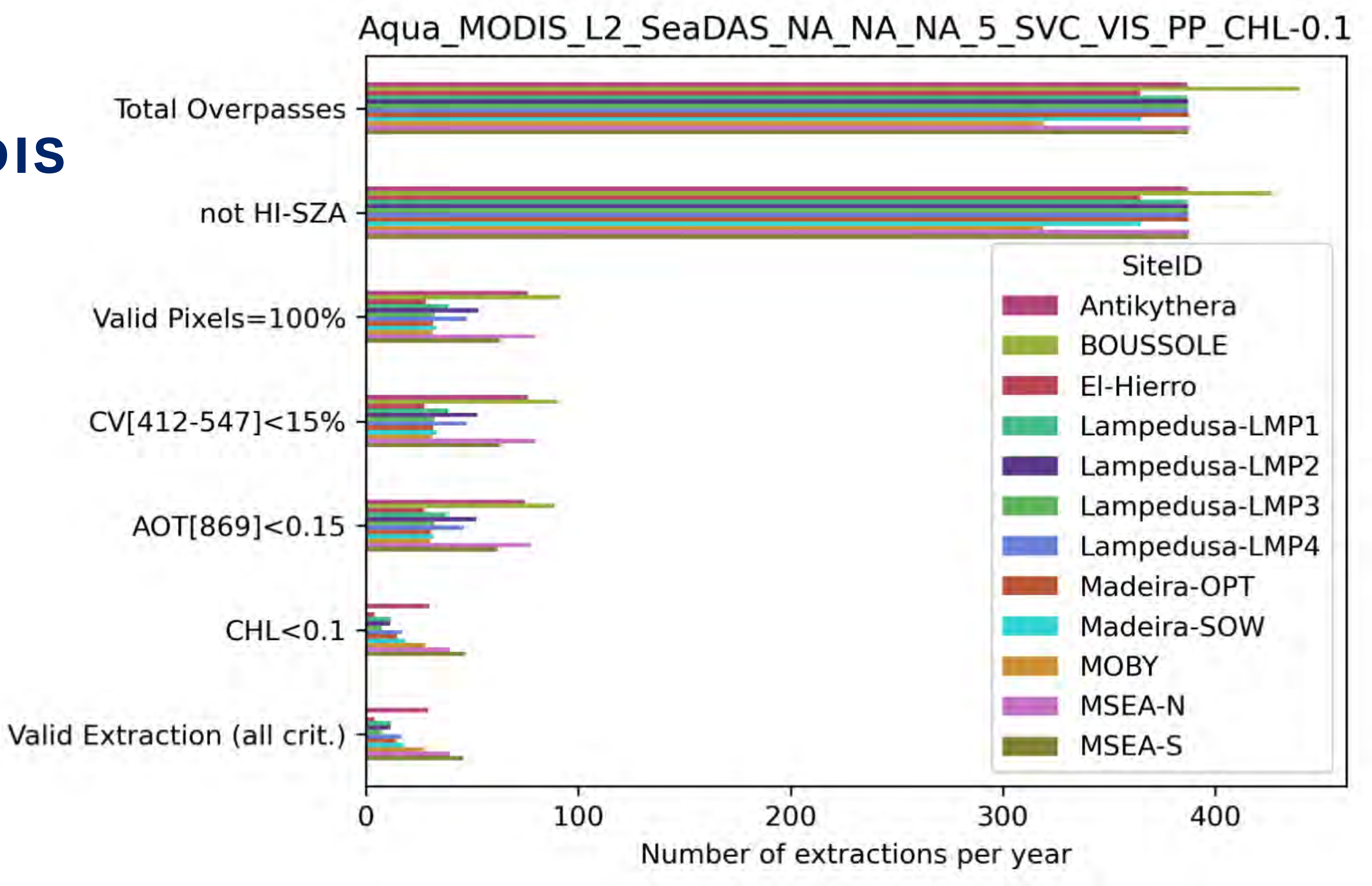
Aqua_MODIS_L2_SeaDAS_NA_NA_NA_5_SVC_VIS_PP_ANG-1
Total Overpasses
not HI-SZA
Valid Pixels=100%
CV[412-547]<15%
AOT[869]<0.15
ANG[869]<1
CHL<0.2
Valid Extraction (all crit.)
0
100
200
300
400
Number of extractions per year
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

Aqua-MODIS



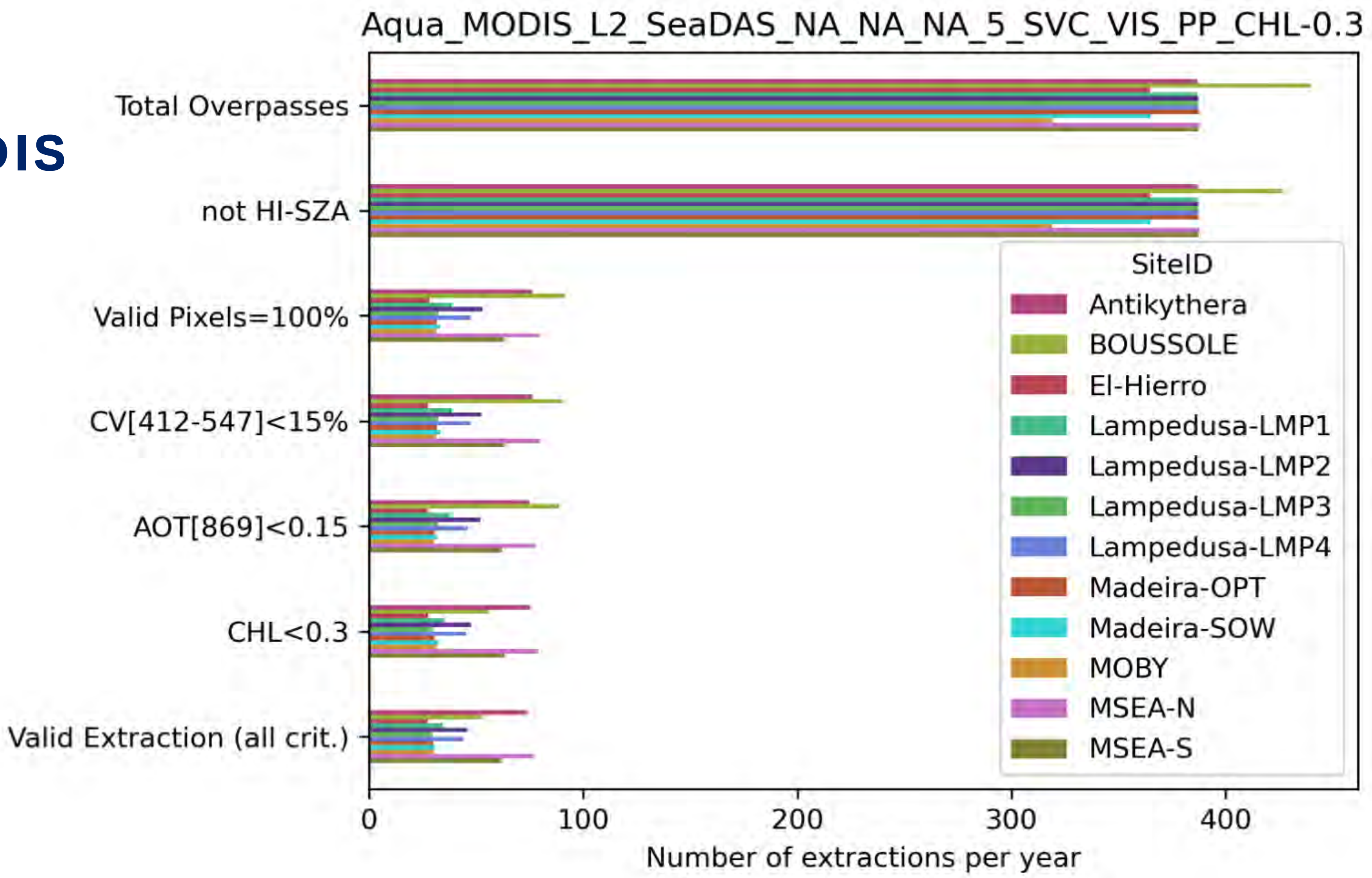
EUMETSAT

Aqua-MODIS



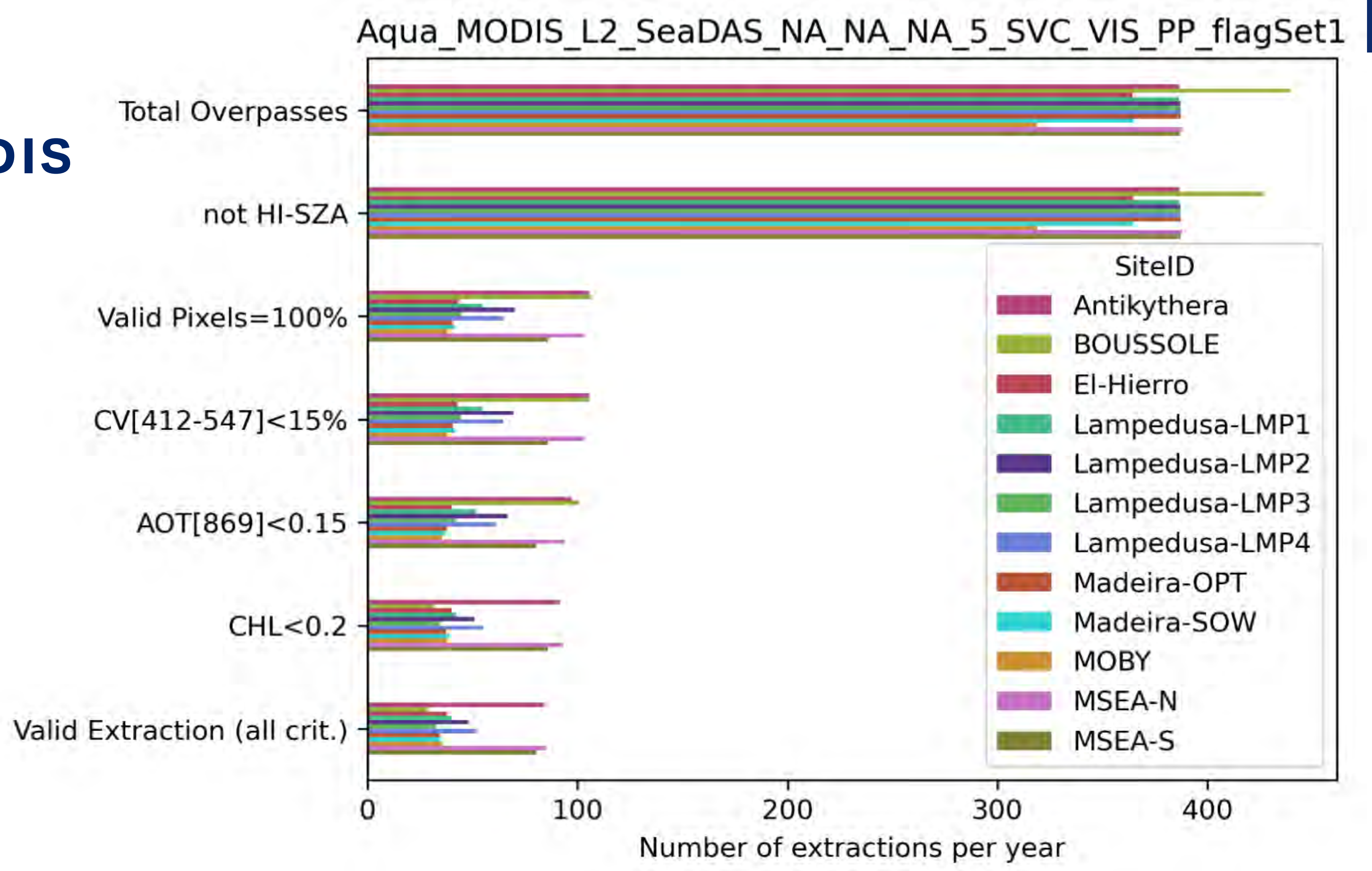
Aqua_MODIS_L2_SeaDAS_NA_NA_NA_5_SVC_VIS_PP_CHL-0.1
Total Overpasses
not HI-SZA
Valid Pixels=100%
CV[412-547]<15%
AOT[869]<0.15
CHL<0.1
Valid Extraction (all crit.)
0
100
200
300
400
Number of extractions per year
SiteID
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

Aqua-MODIS



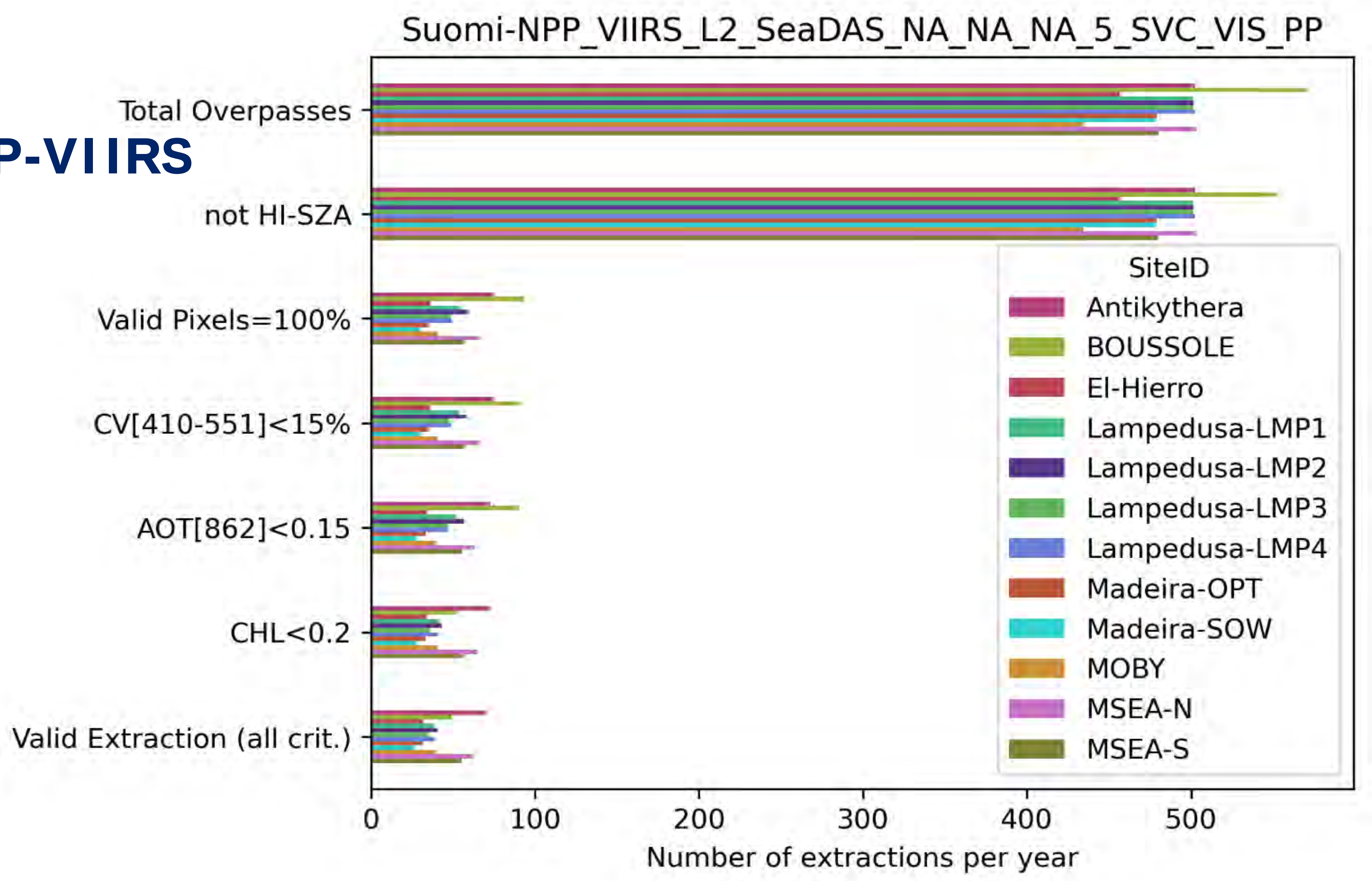
EUMETSAT

Aqua-MODIS



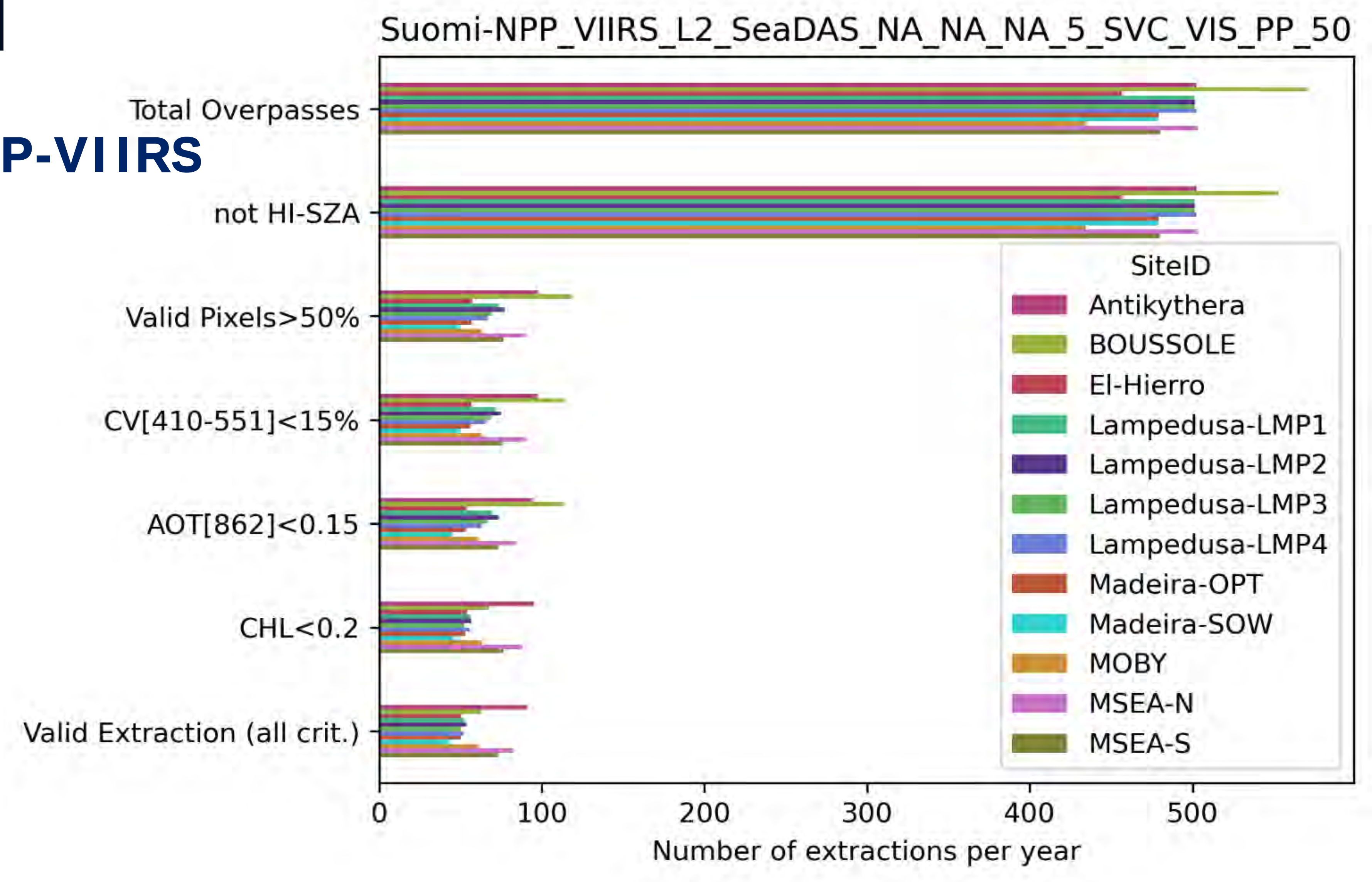
EUMETSAT

Suomi-NPP-VIIRS

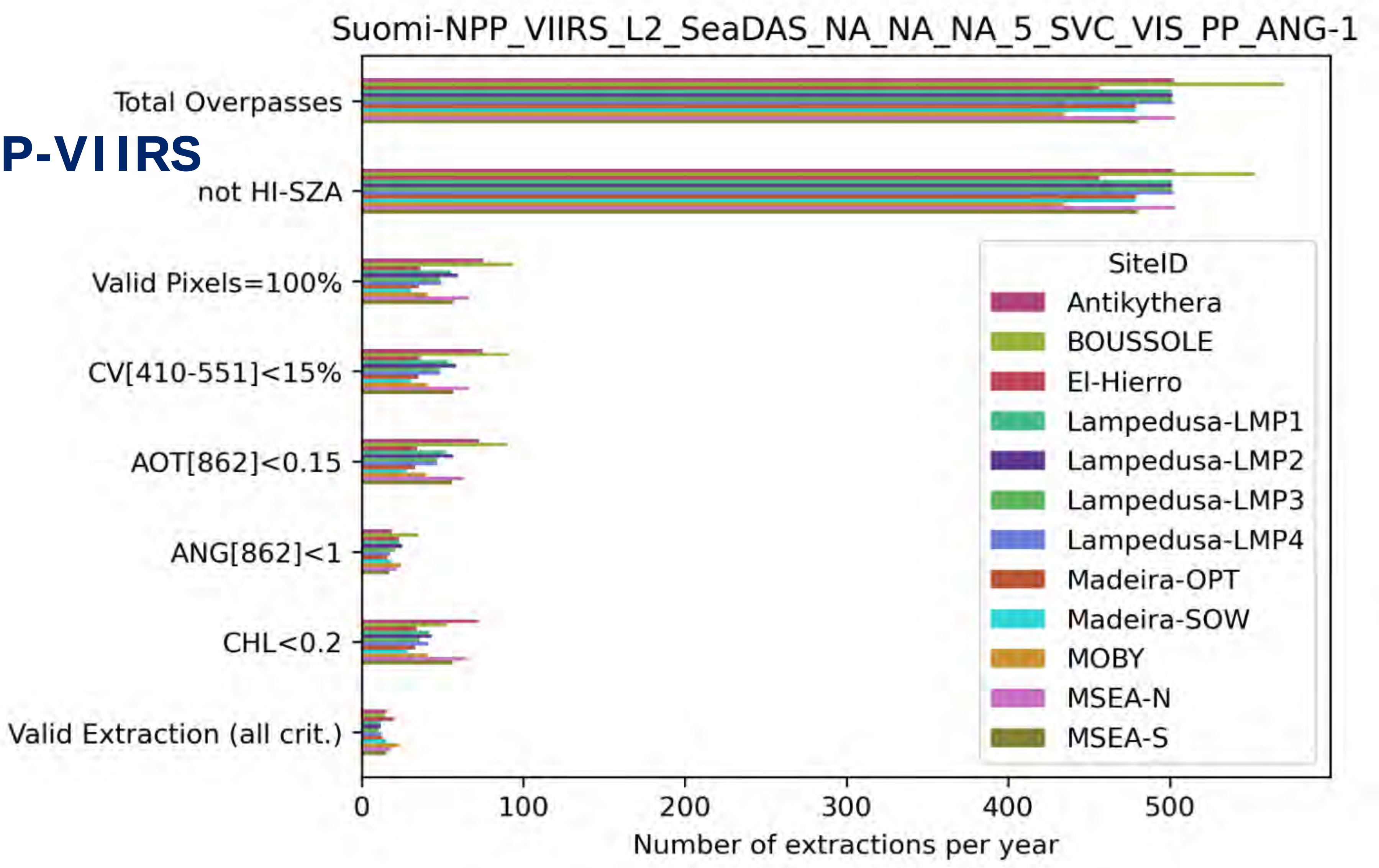


EUMETSAT

Suomi-NPP-VIIRS

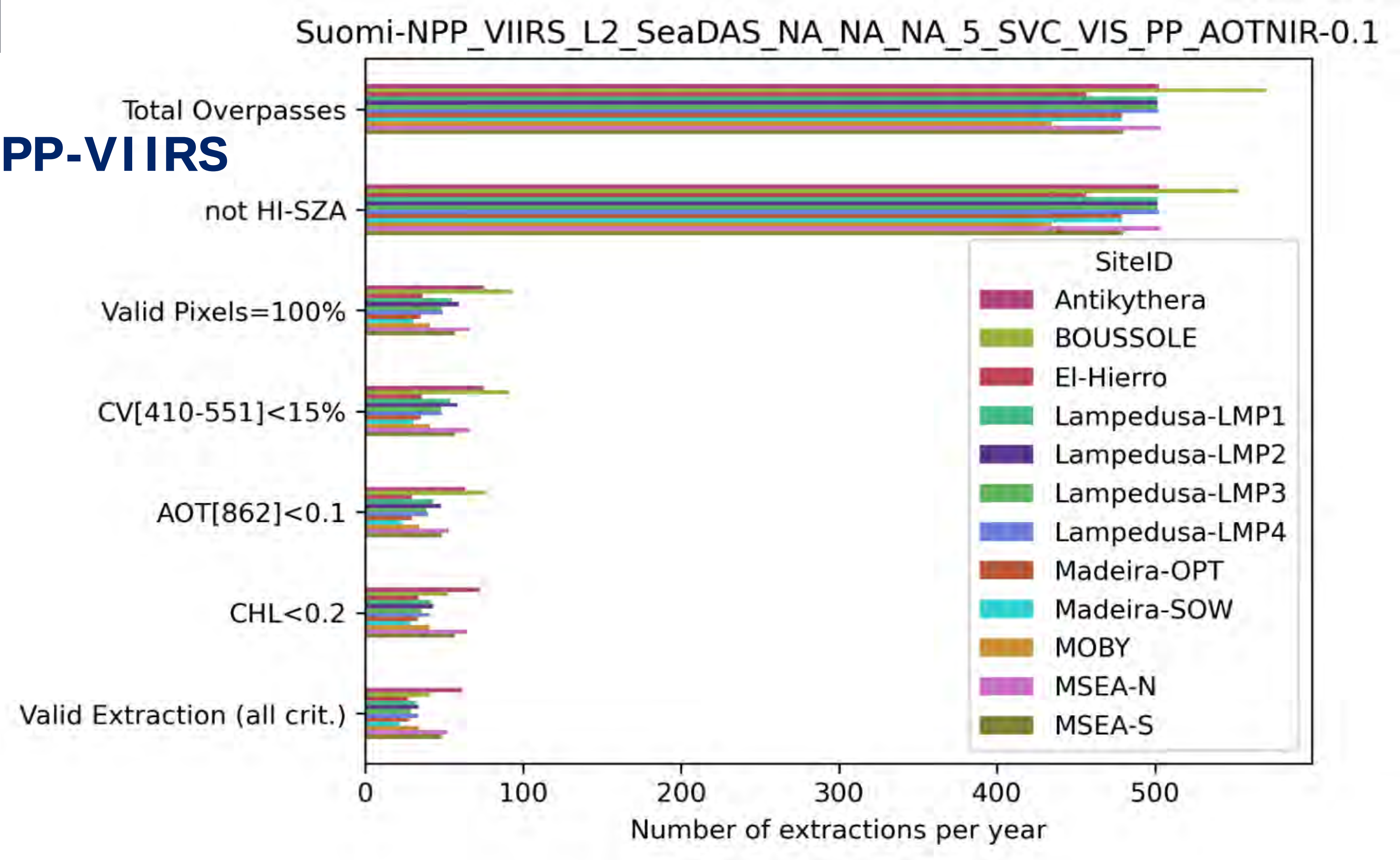


Suomi-NPP-VIIRS

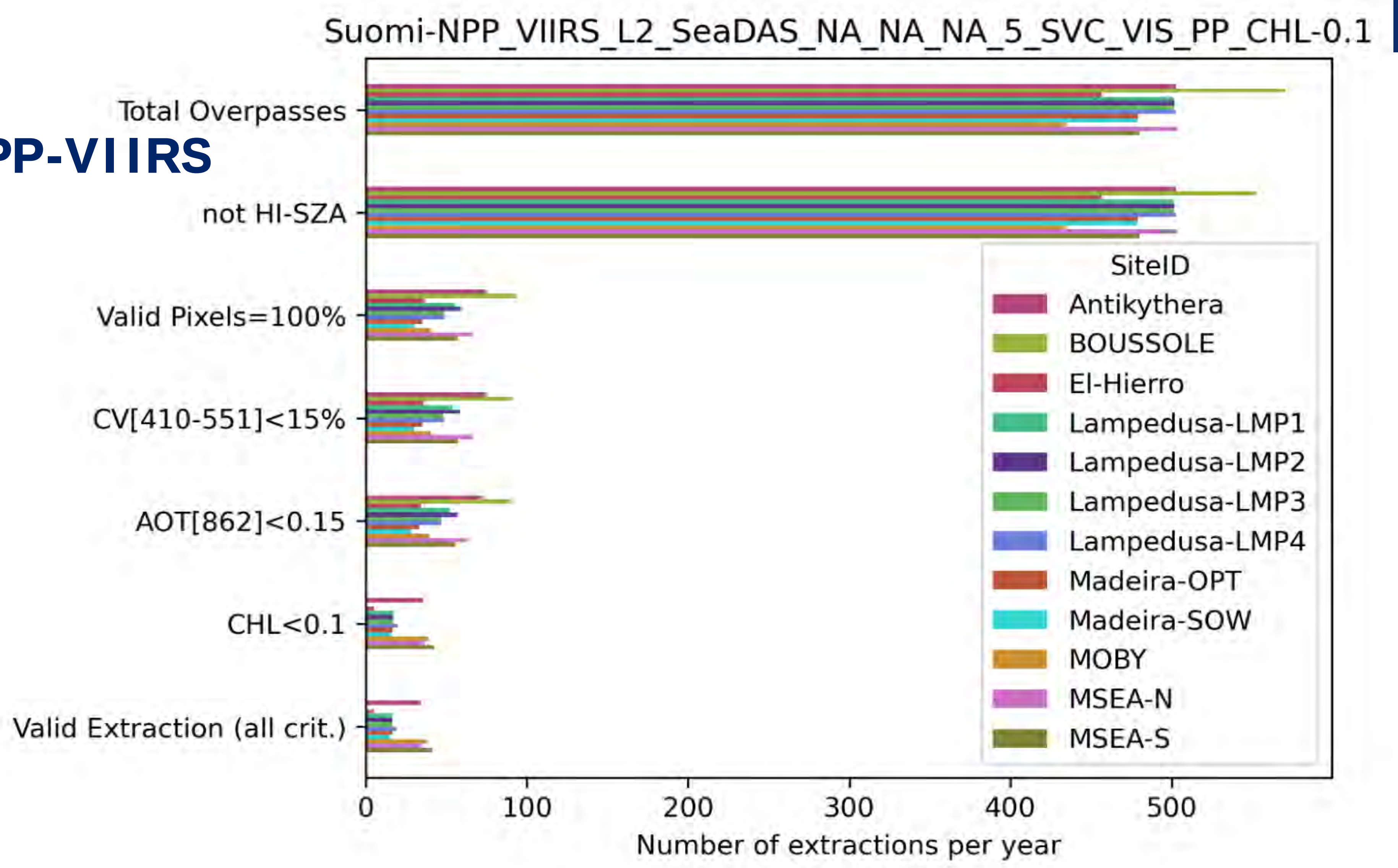


EUMETSAT

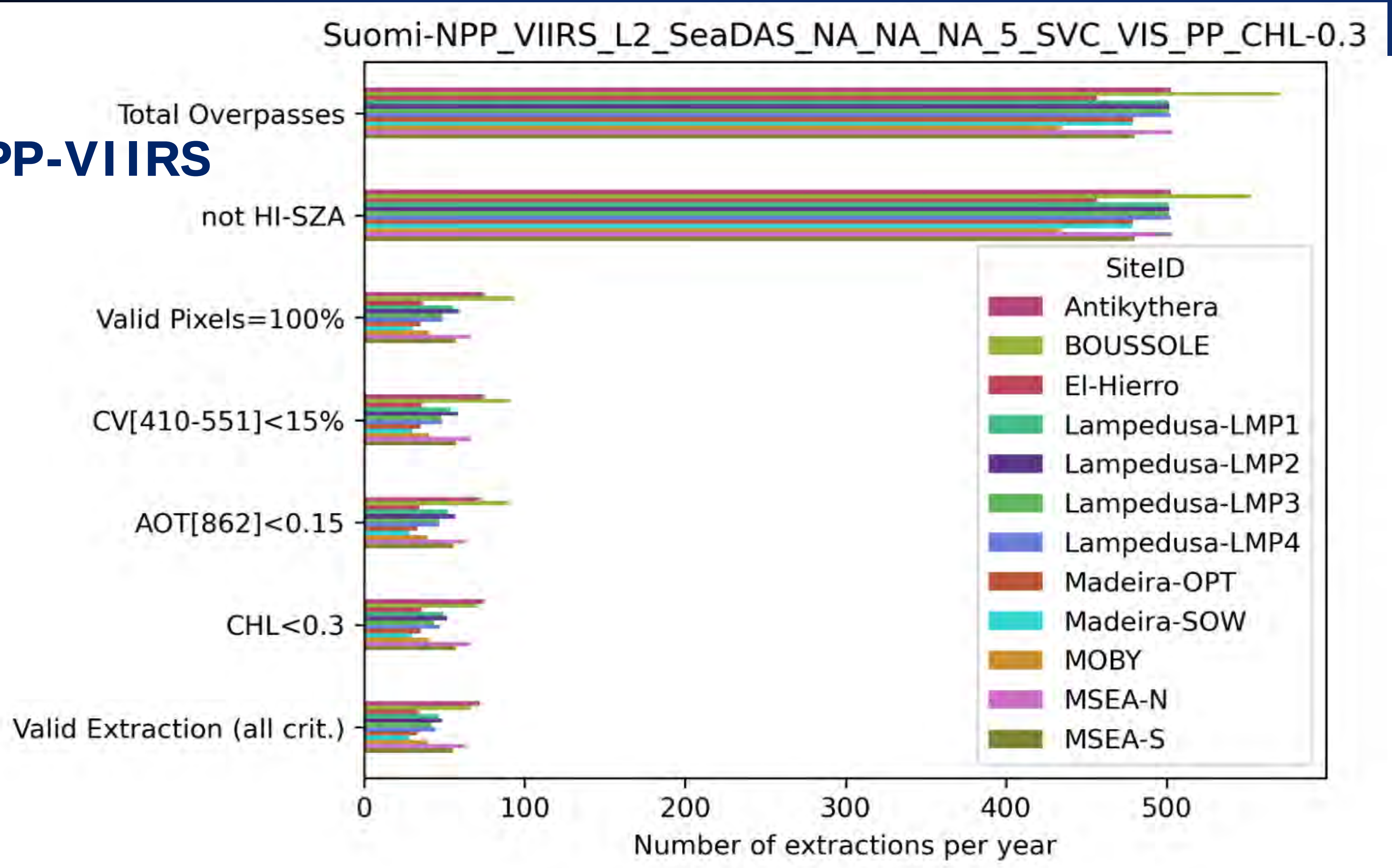
Suomi-NPP-VIIRS



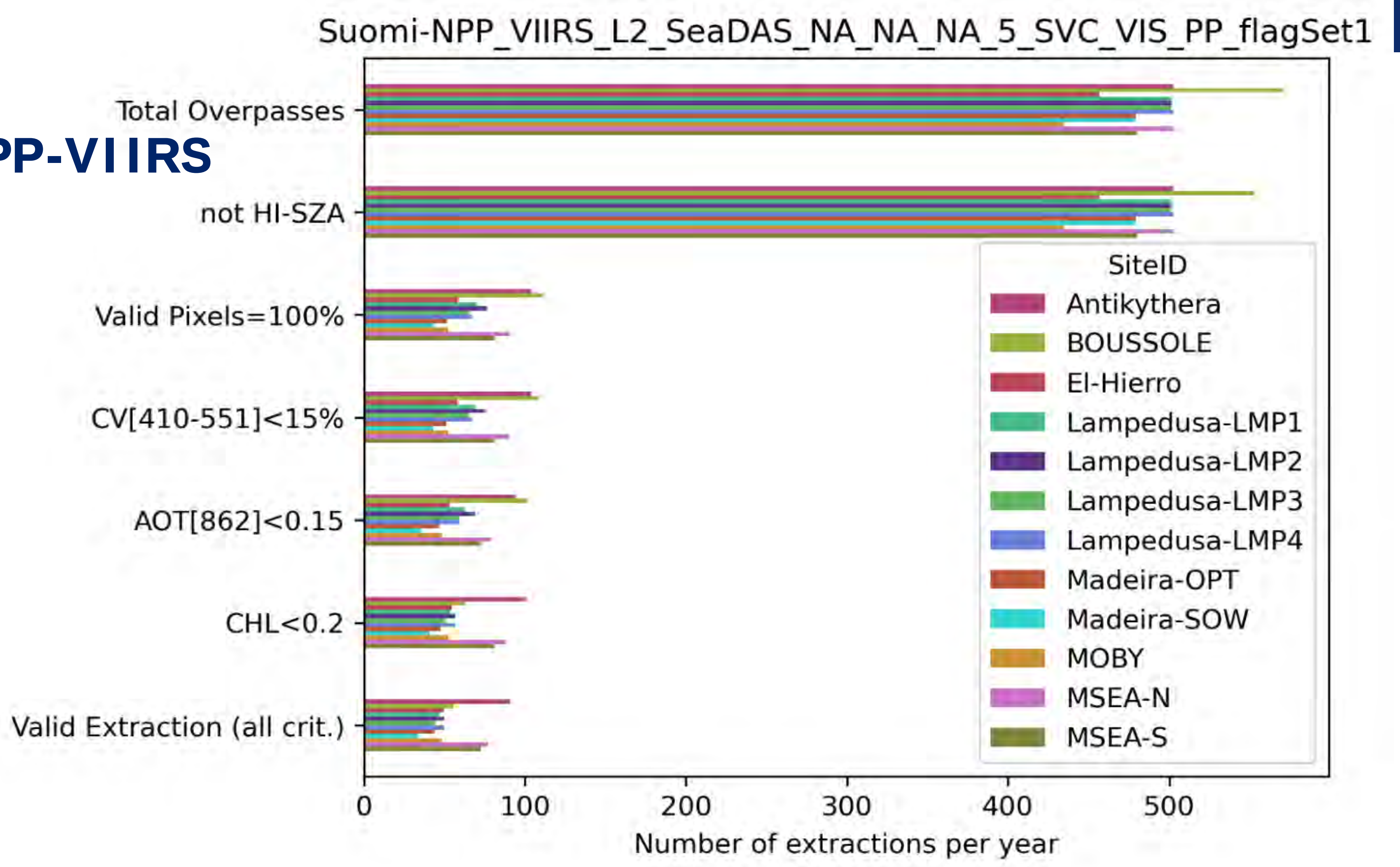
Suomi-NPP-VIIRS



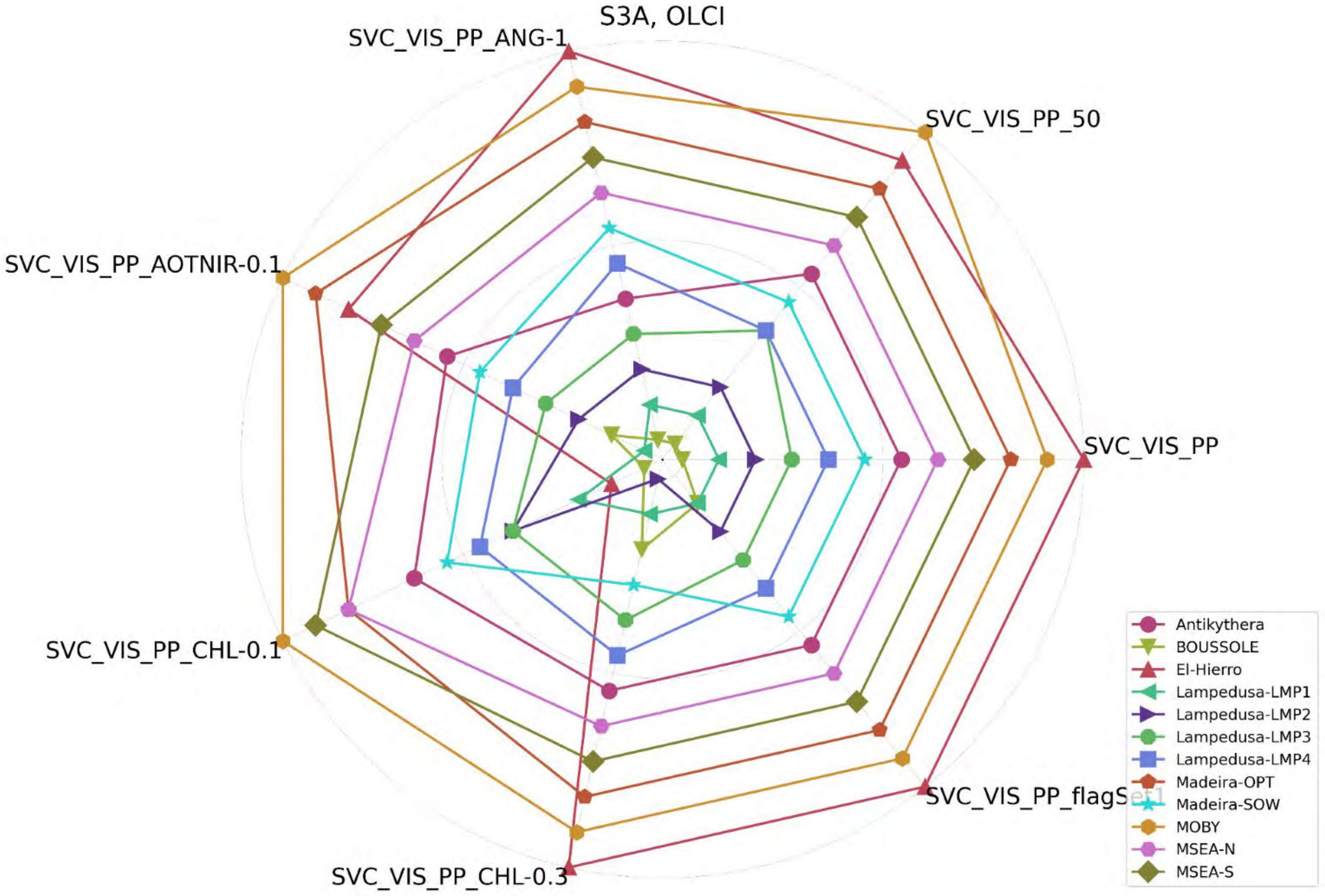
Suomi-NPP-VIIRS



Suomi-NPP-VIIRS

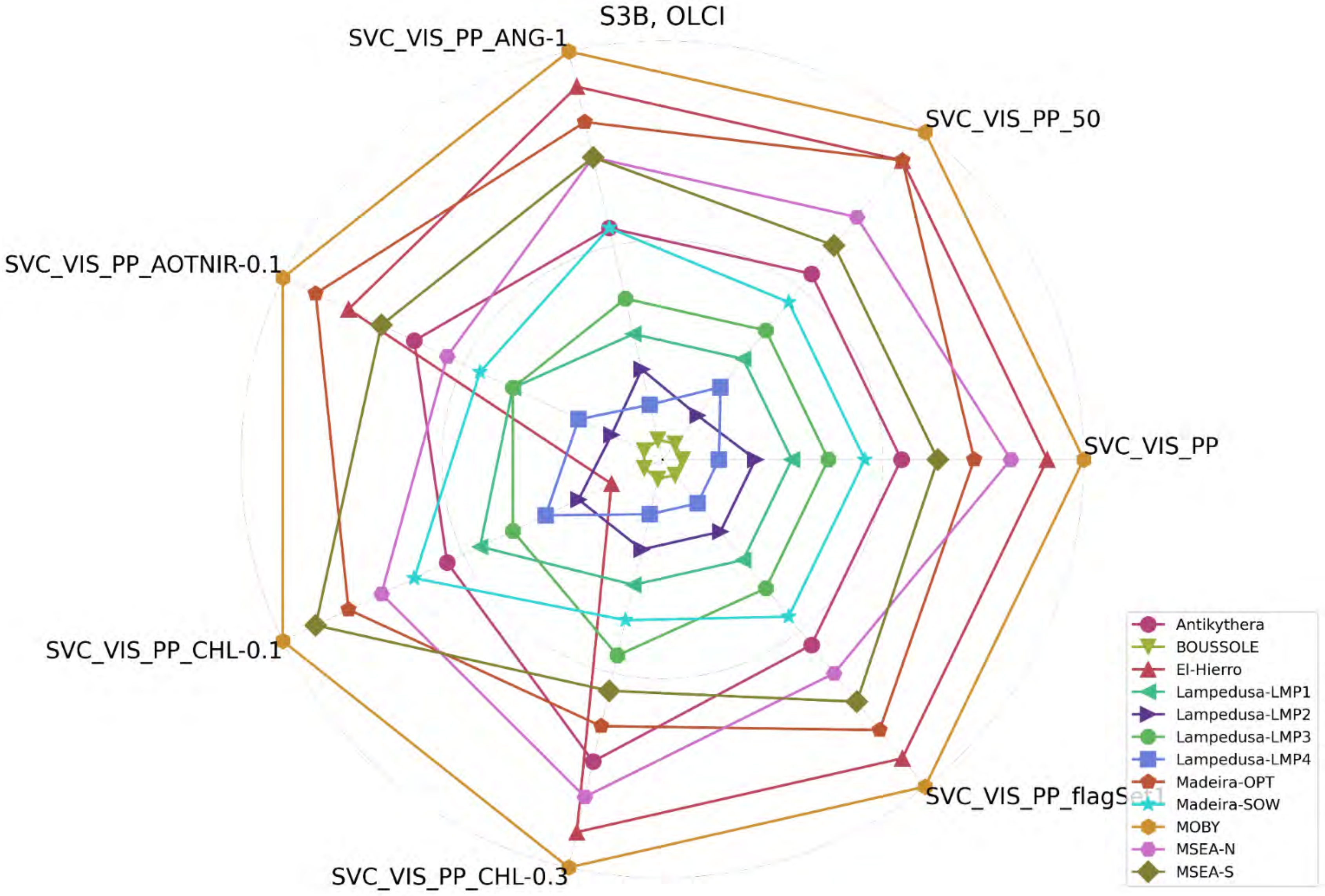


OLCI-A



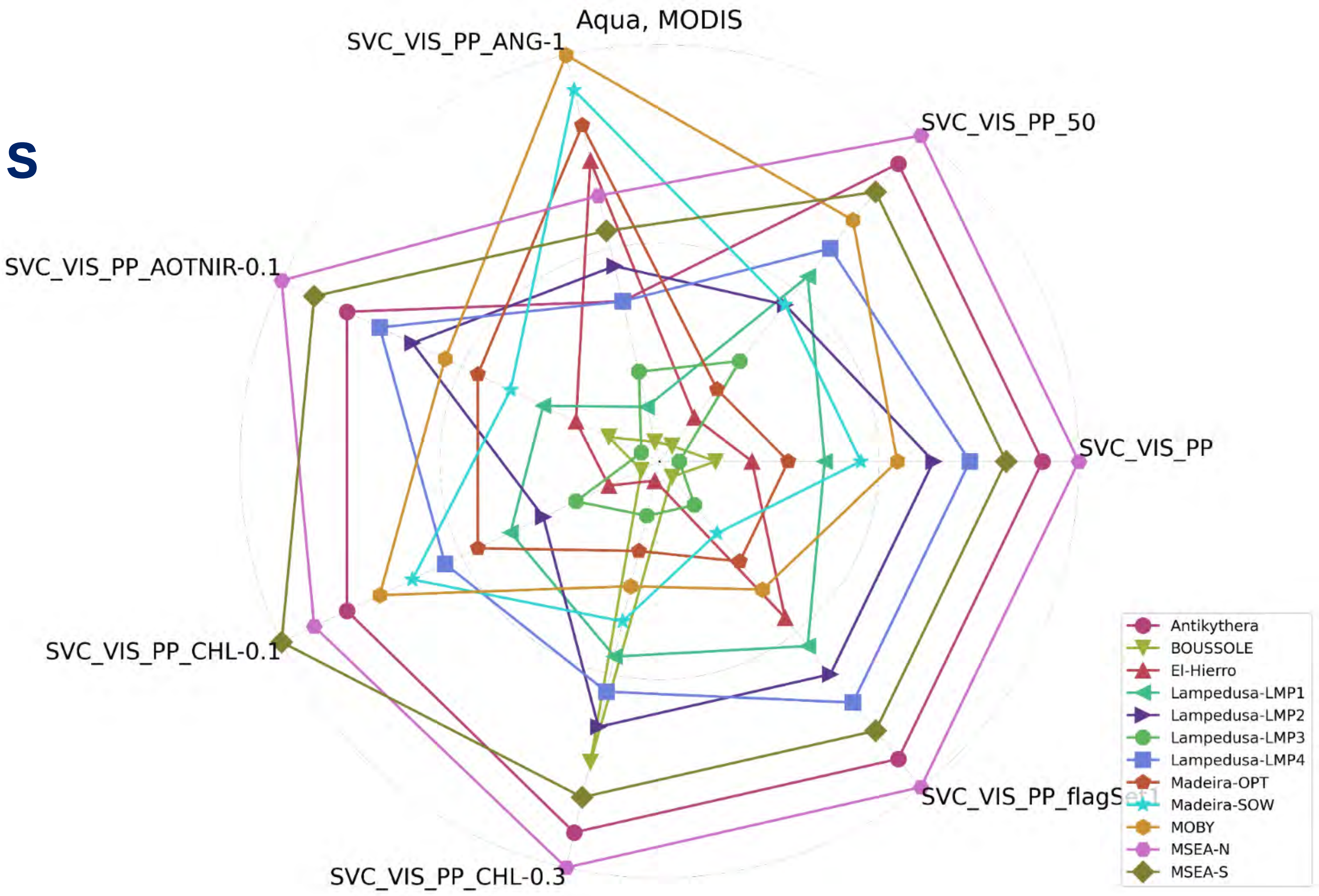
EUMETSAT

OLCI-B



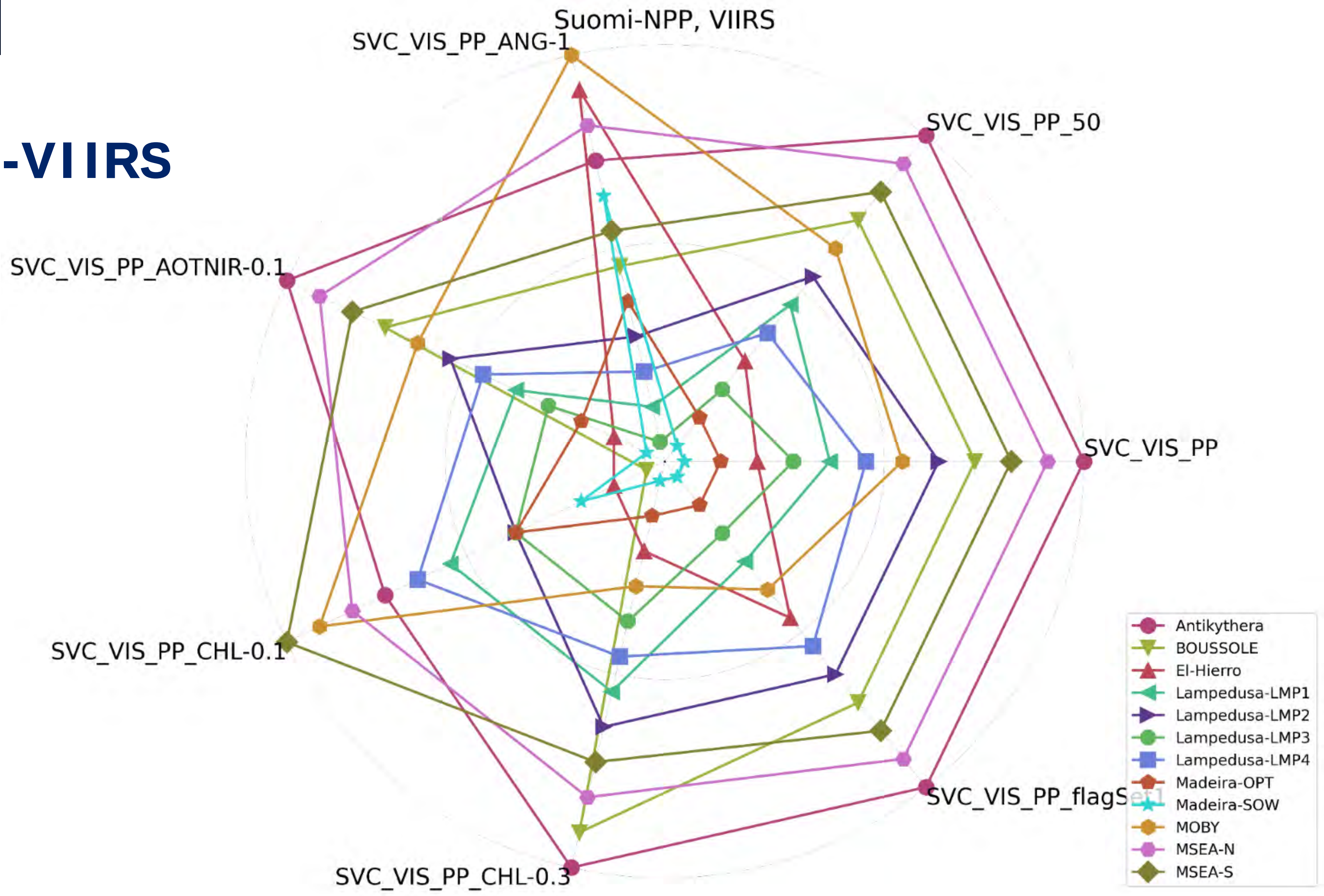
EUMETSAT

Aqua-MODIS



Aqua, MODIS
SVC_VIS_PP_ANG-1
SVC_VIS_PP_50
SVC_VIS_PP_AOTNIR-0.1
SVC_VIS_PP
SVC_VIS_PP_CHL-0.1
SVC_VIS_PP_flagSet1
SVC_VIS_PP_CHL-0.3
Antikythera
BOUSSOLE
El-Hierro
Lampedusa-LMP1
Lampedusa-LMP2
Lampedusa-LMP3
Lampedusa-LMP4
Madeira-OPT
Madeira-SOW
MOBY
MSEA-N
MSEA-S

Suomi-NPP-VIIRS



EUMETSAT

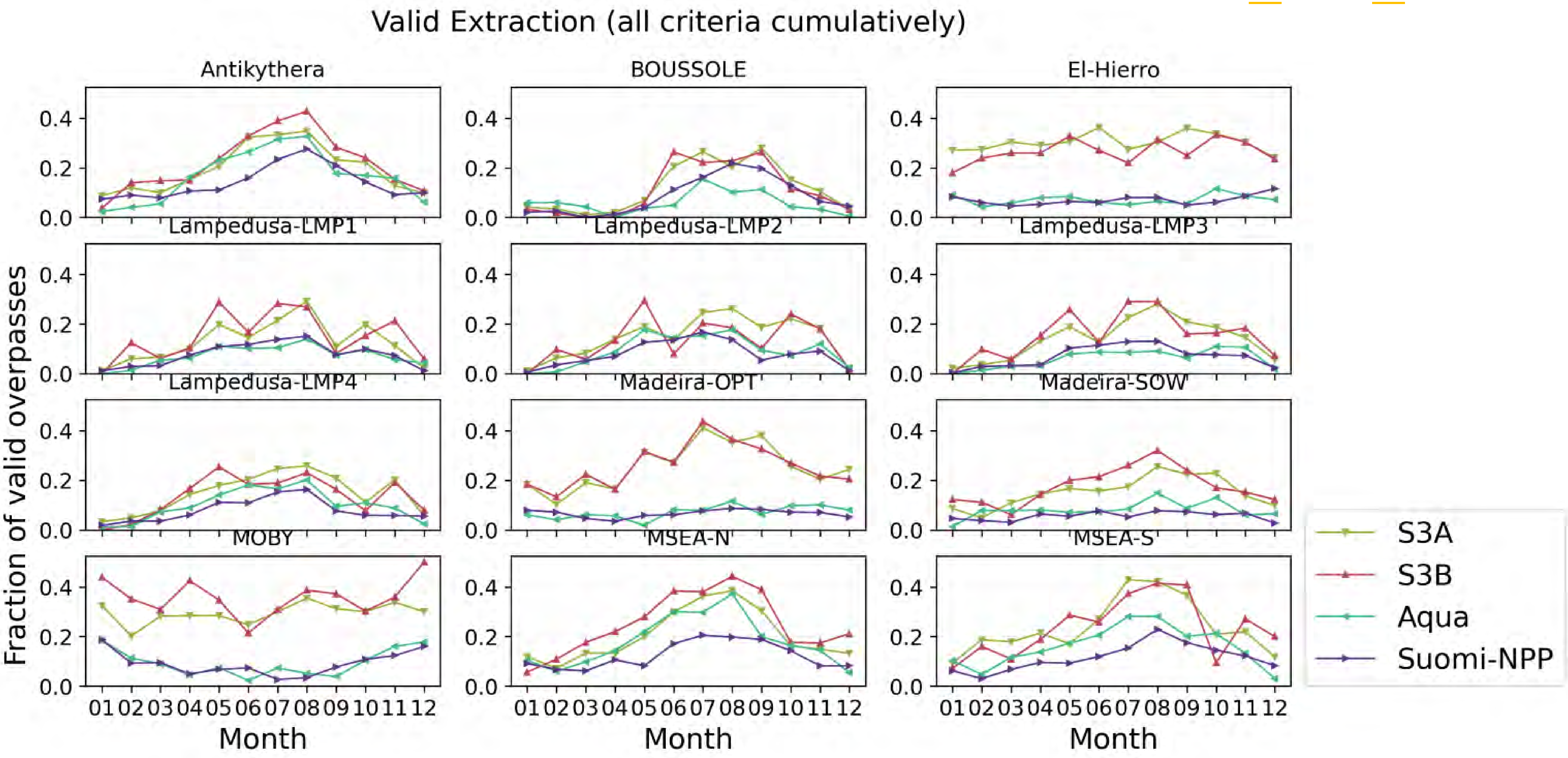
Monthly prevalence of valid extractions **SVC_VIS_PP**

Monthly prevalence of valid extractions (SVC_VIS_PP)

Results shown as “**fraction**” of overpasses that matched certain criterion per month

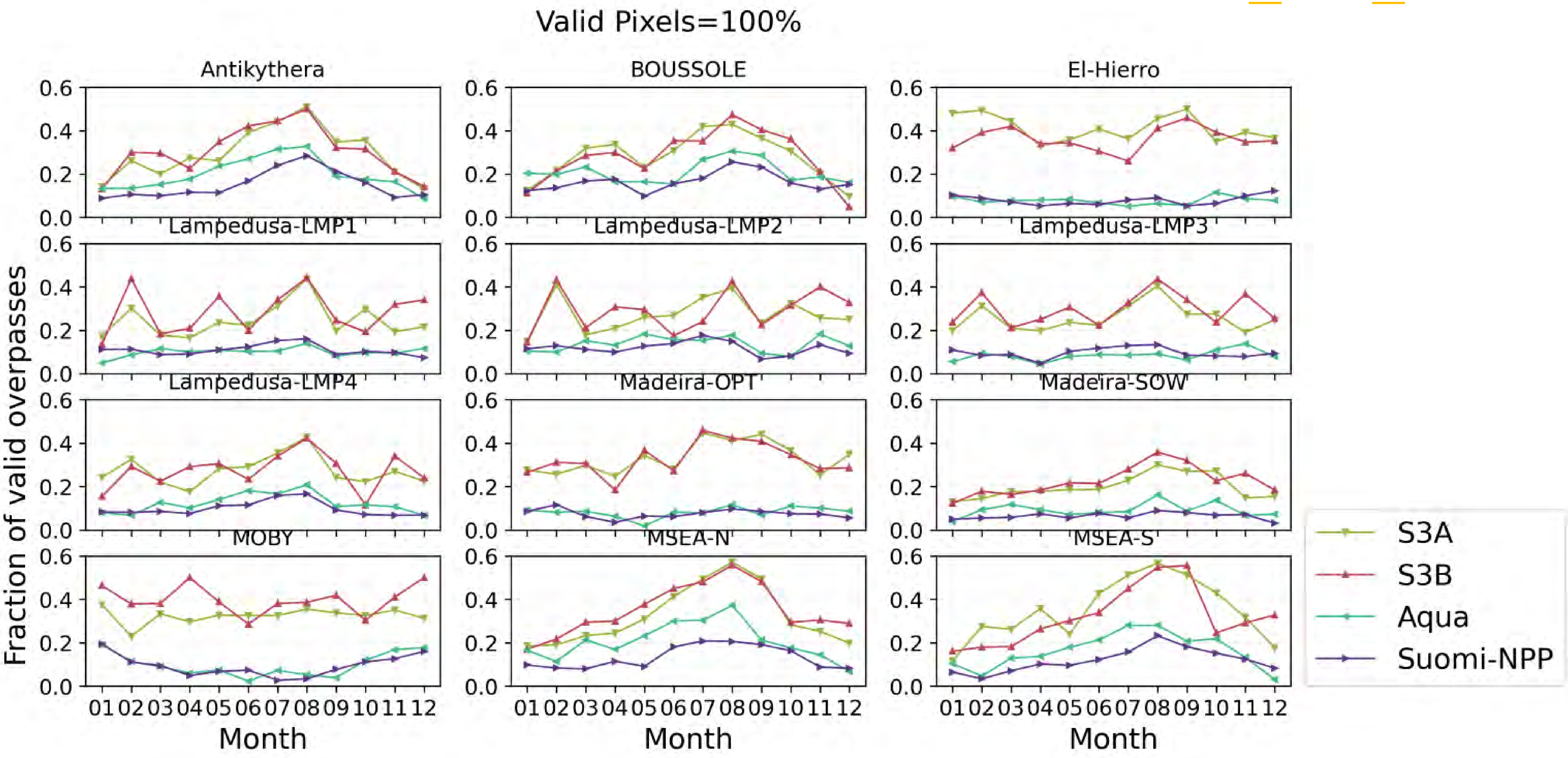
EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

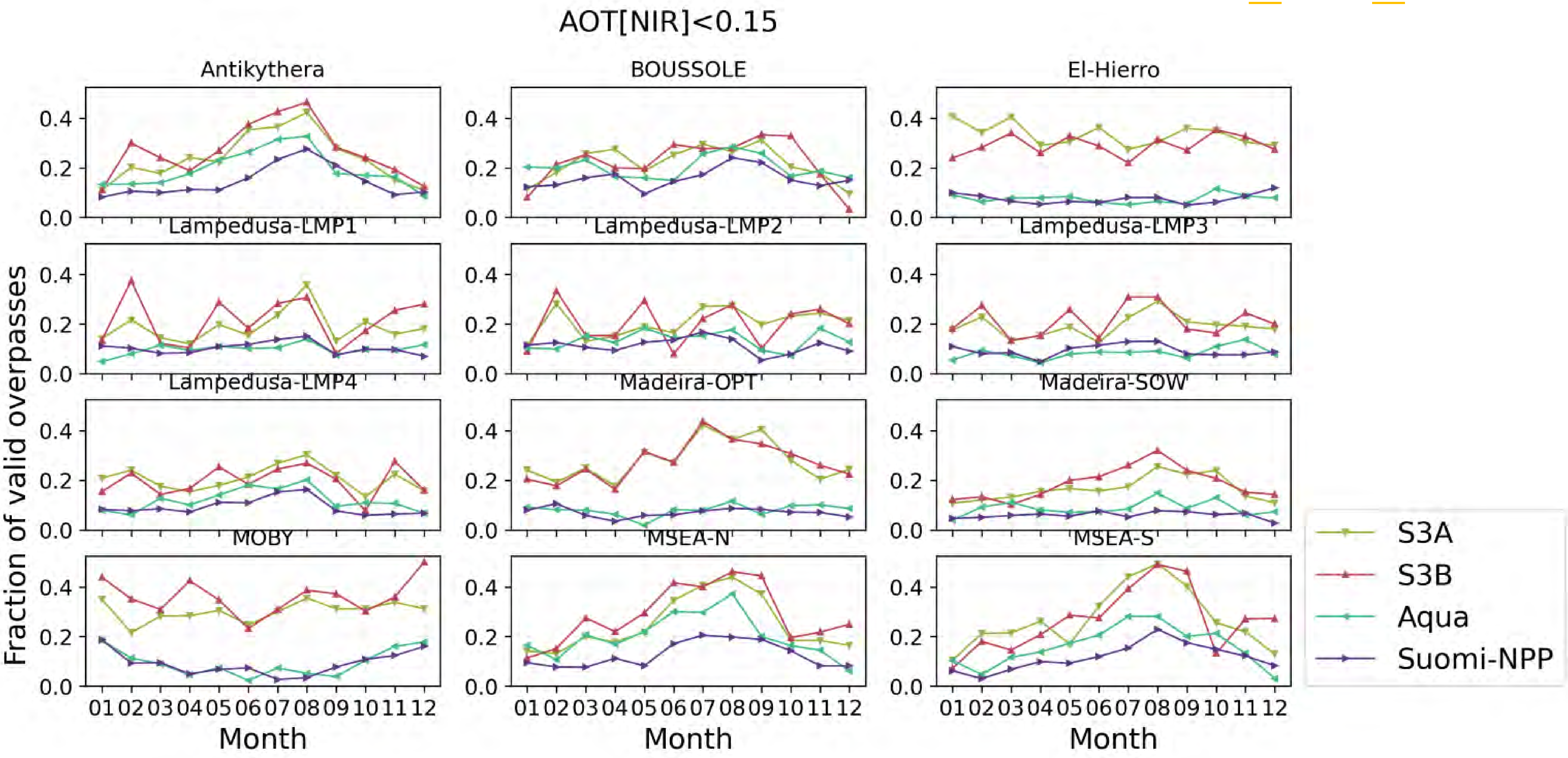


EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

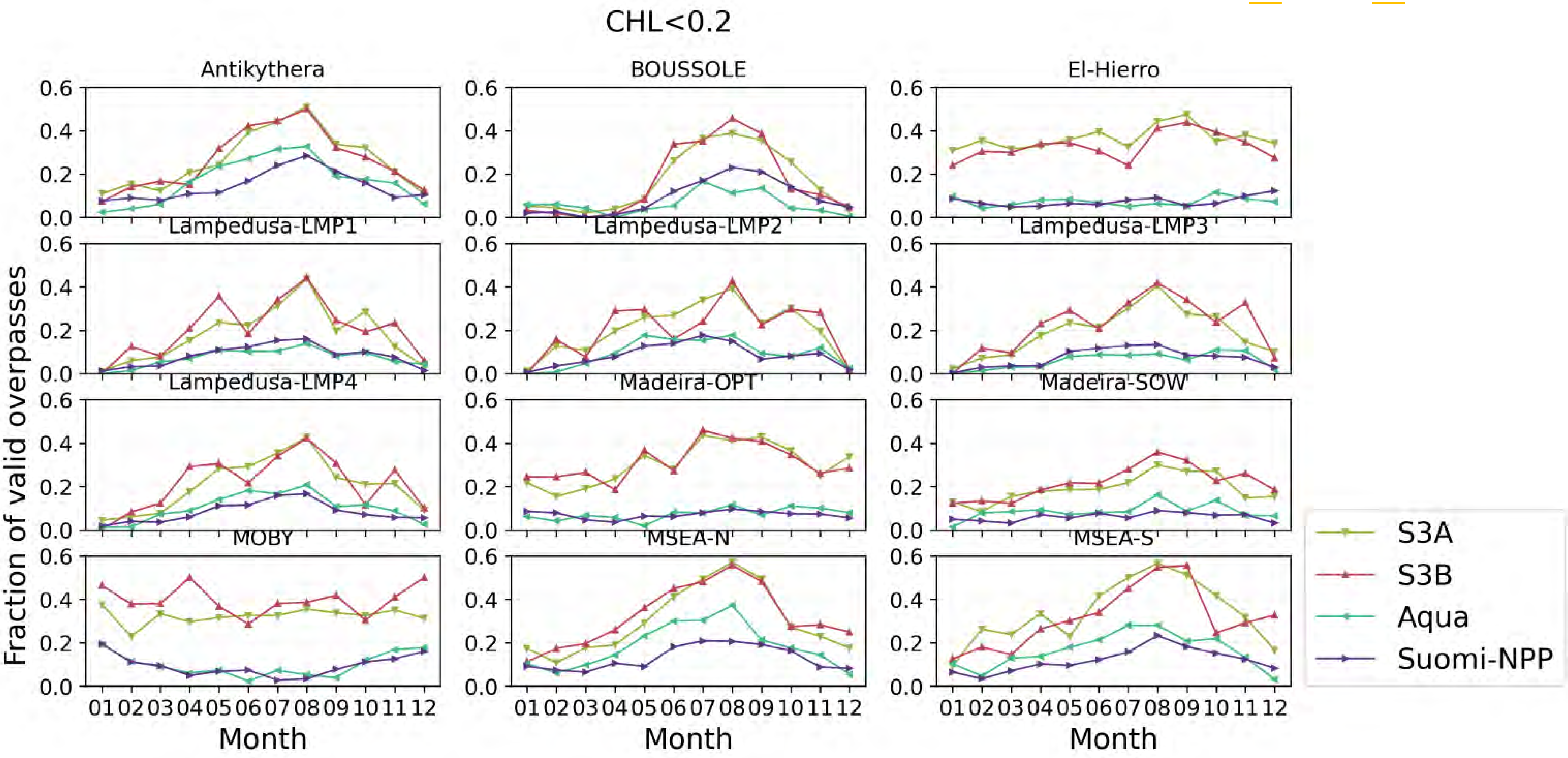


Monthly prevalence of valid extractions (SVC_VIS_PP)



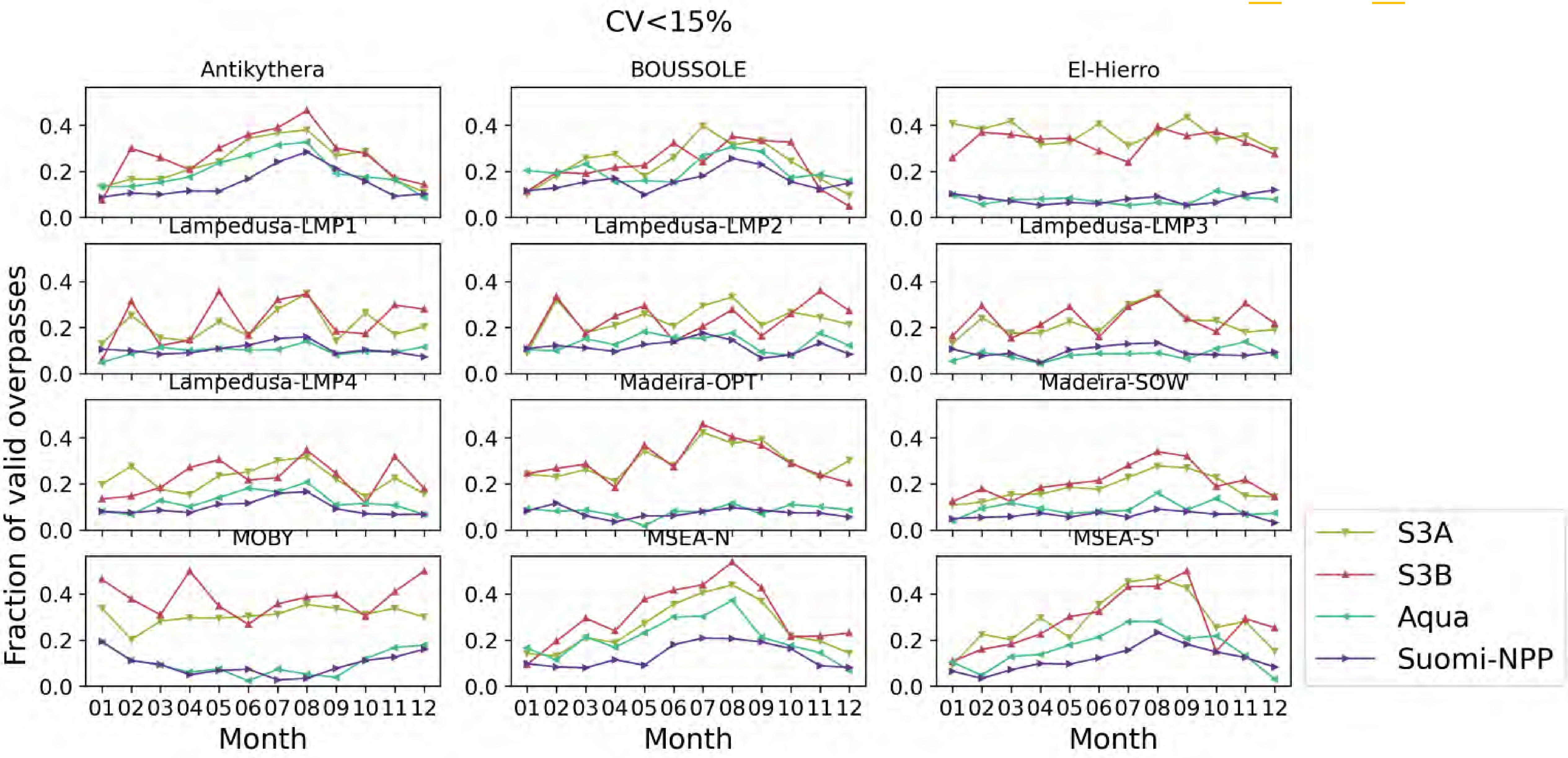
EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

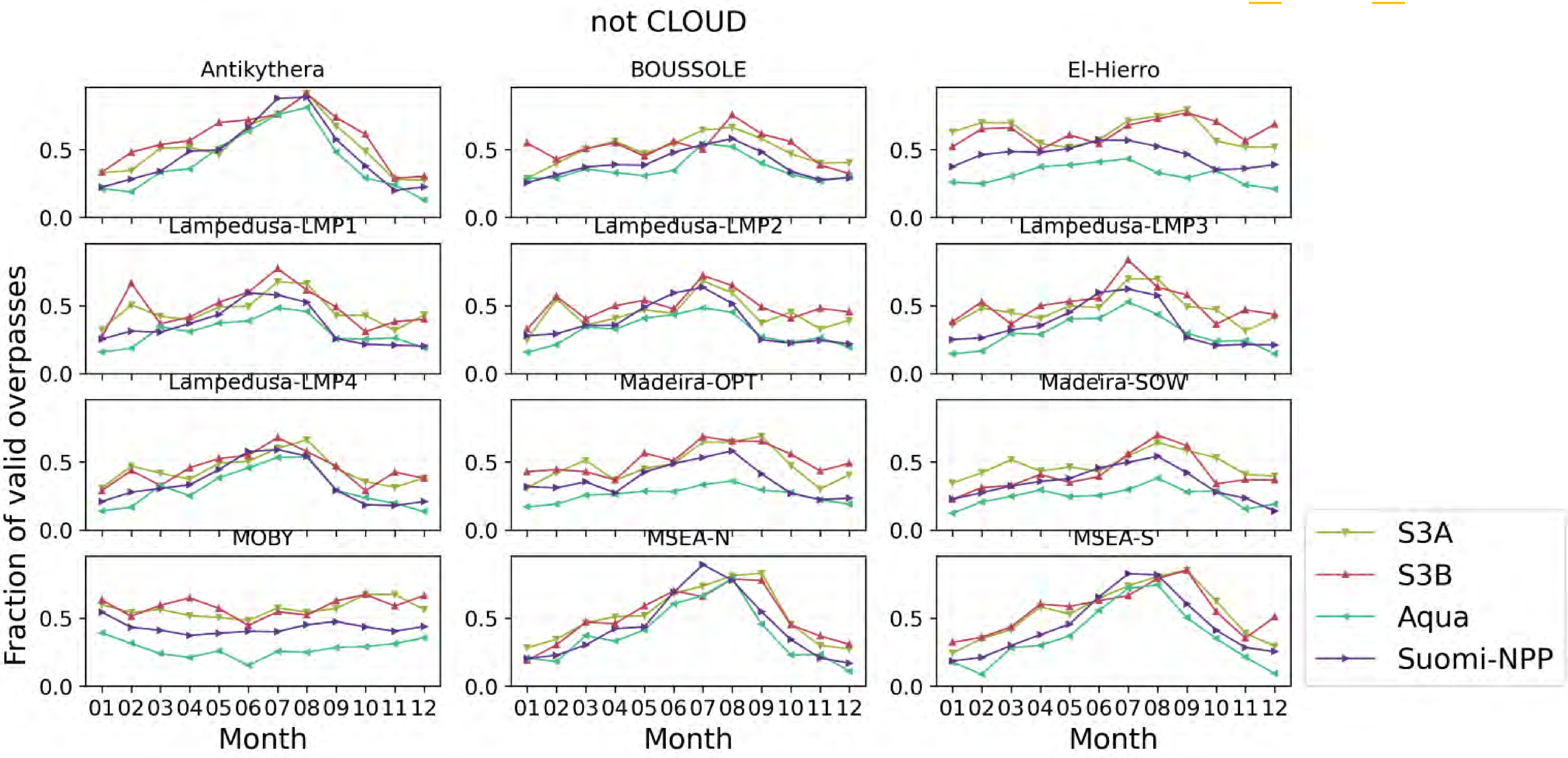


EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

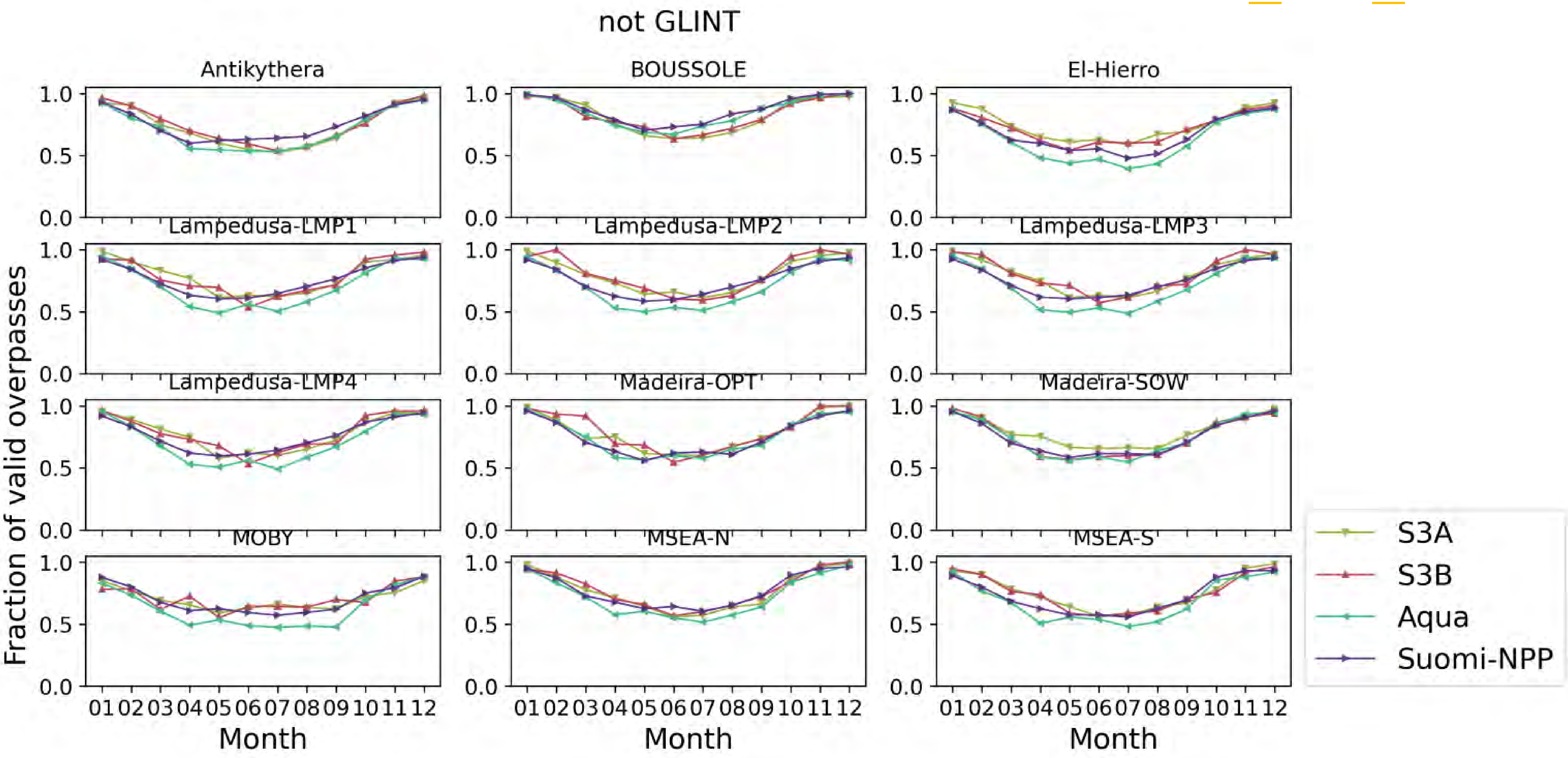


Monthly prevalence of valid extractions (SVC_VIS_PP)



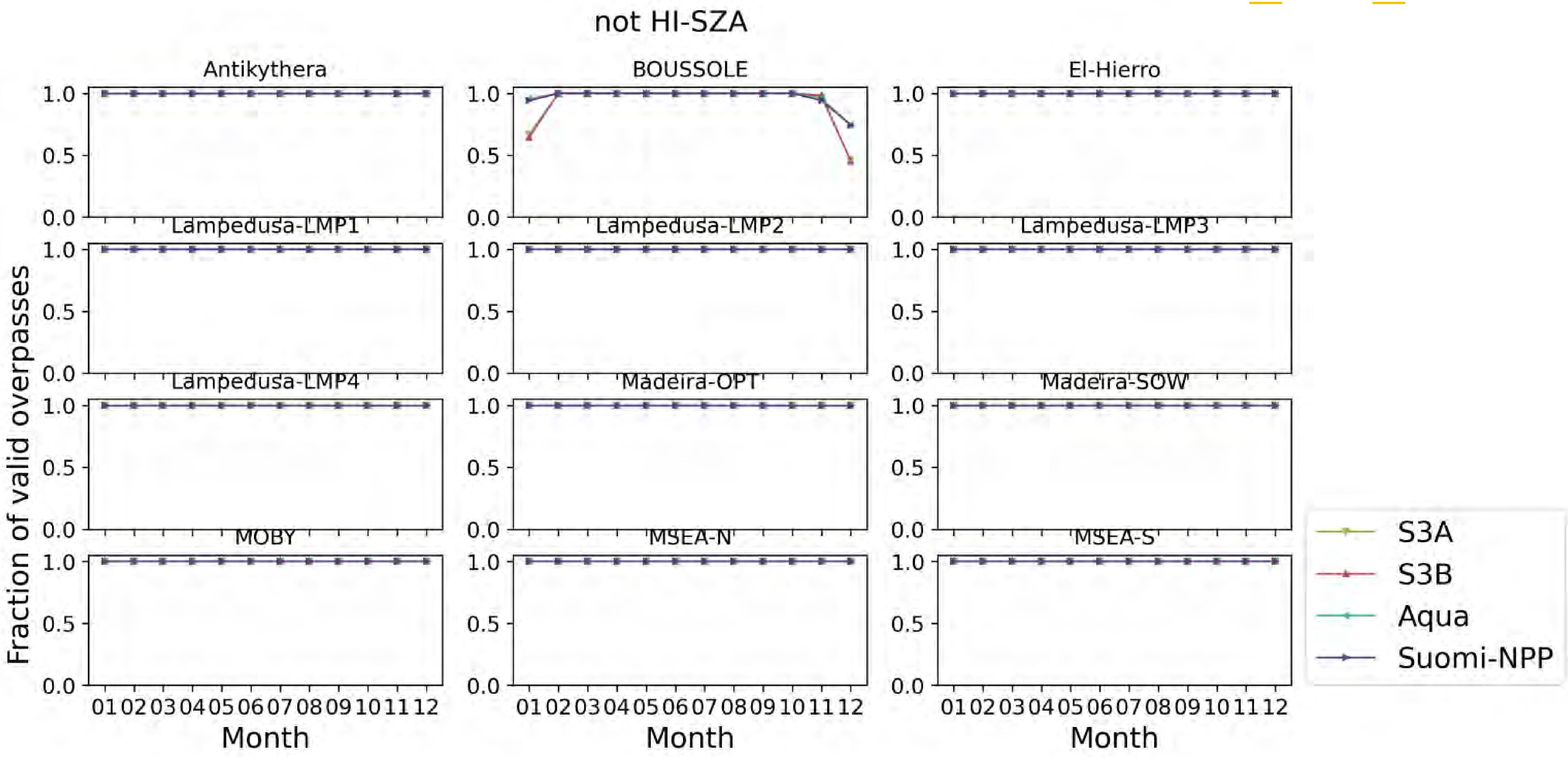
EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

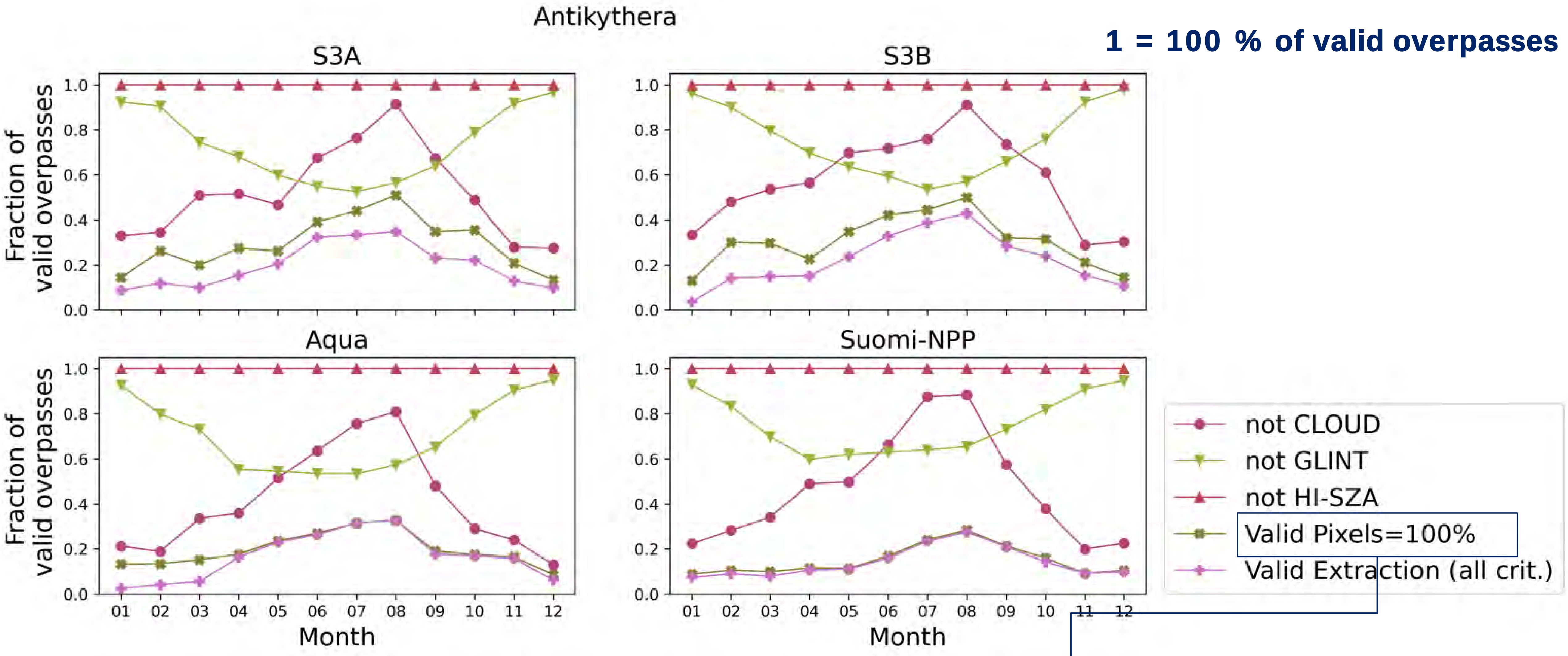


EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

Screening criteria grouped for each site

Monthly prevalence of valid extractions (SVC_VIS_PP)



1 = 100 % of valid overpasses

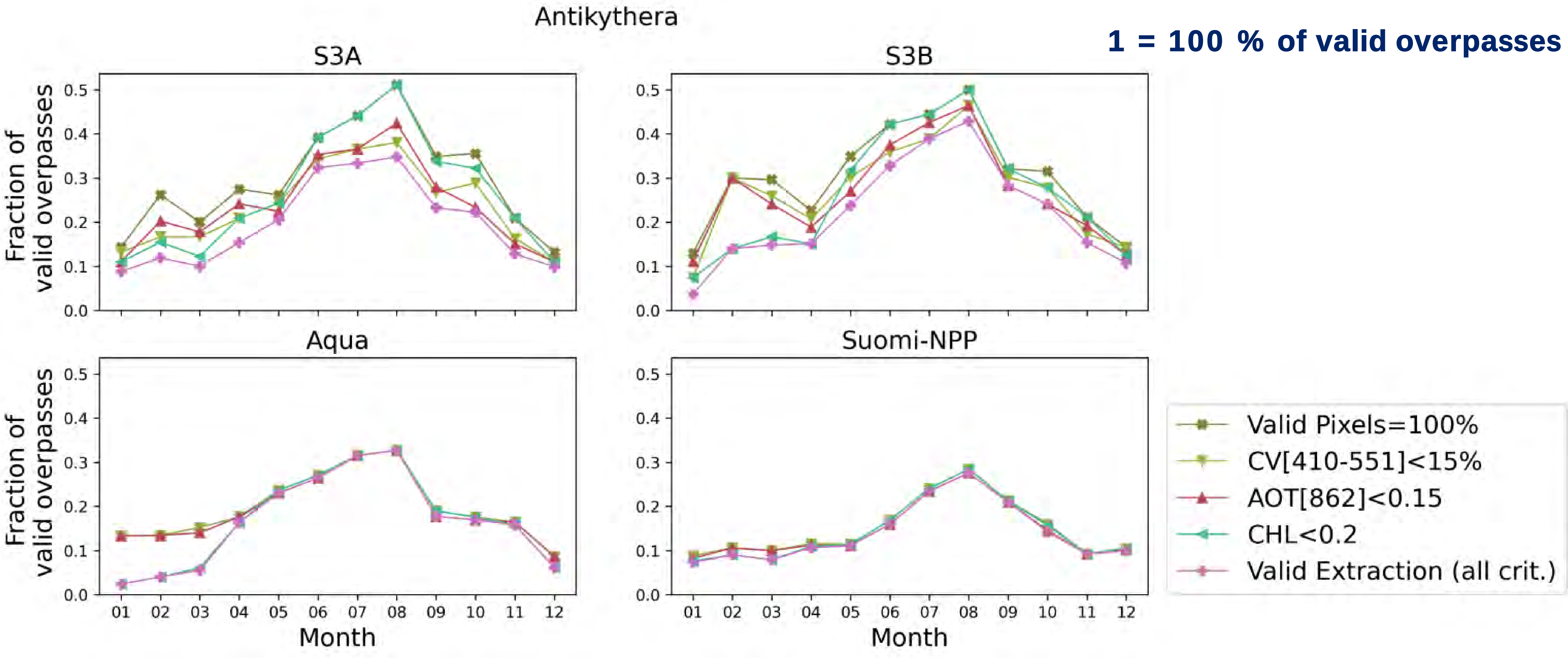
None of the pixels in the 5x5 window are flagged by any of the flags considered in SVC_VIS_PP

1 = 100 % of valid overpasses

EUMETSAT

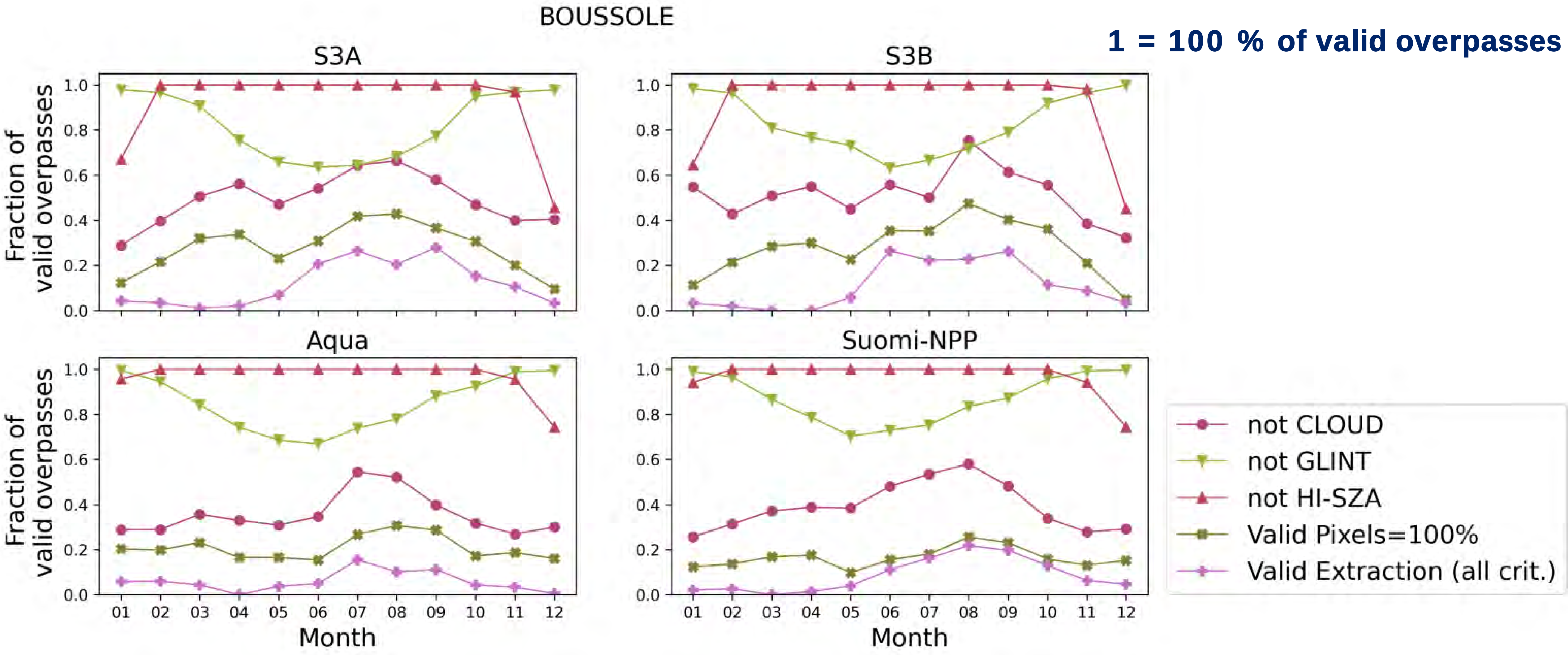
Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



Monthly prevalence of valid extractions (SVC_VIS_PP)

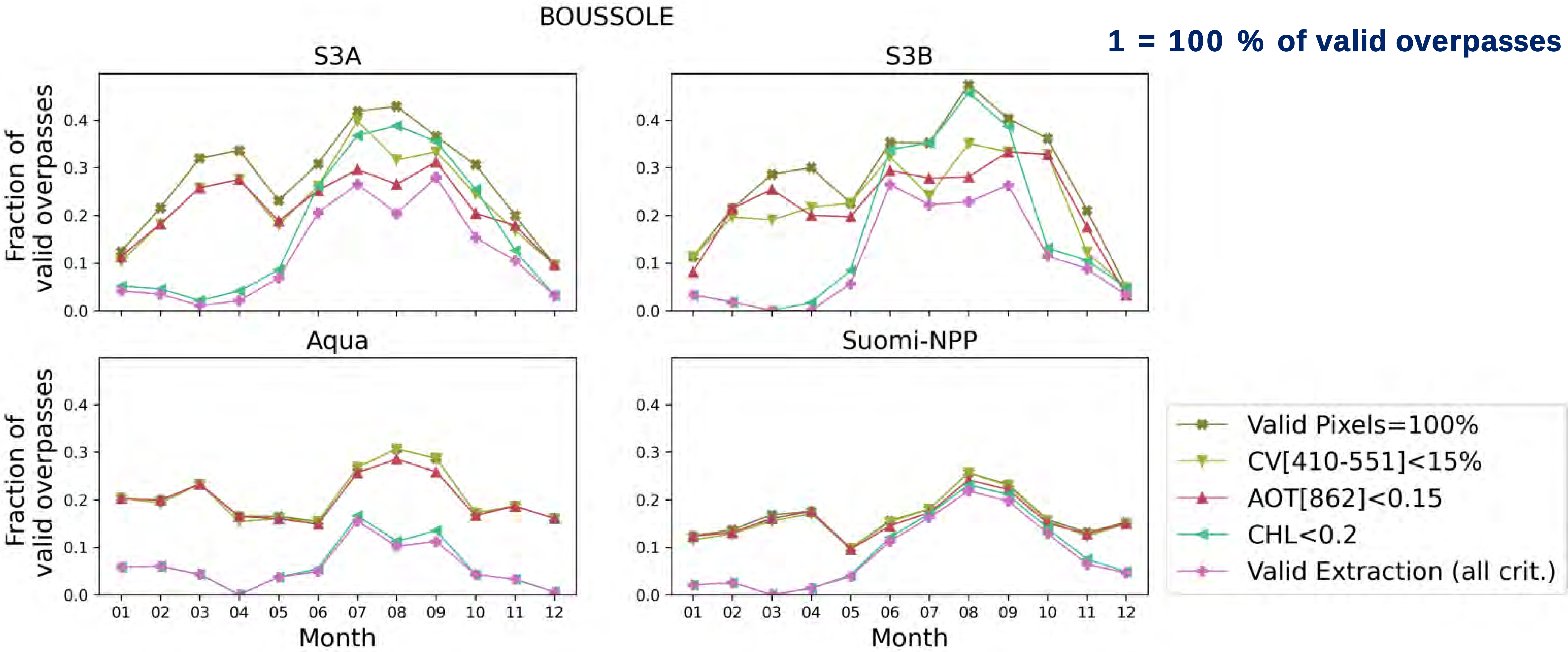
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

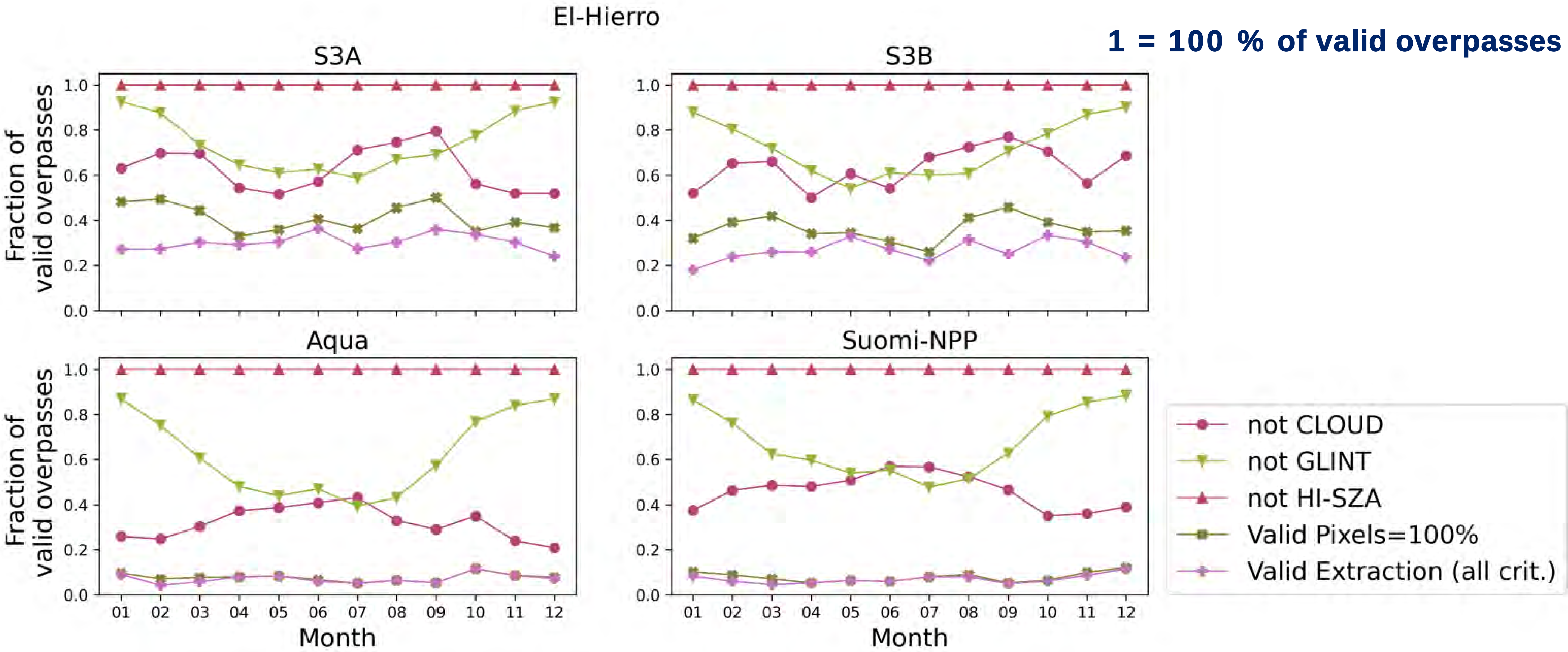
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

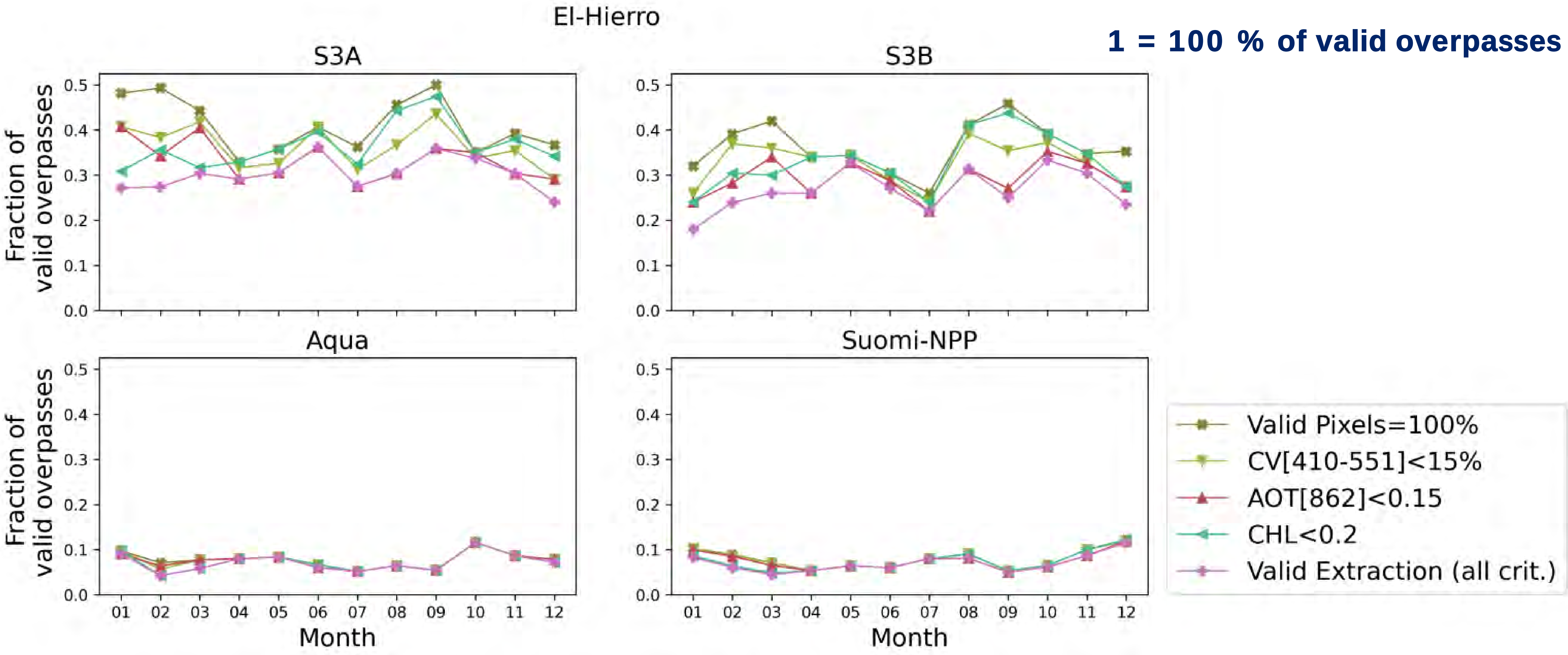
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

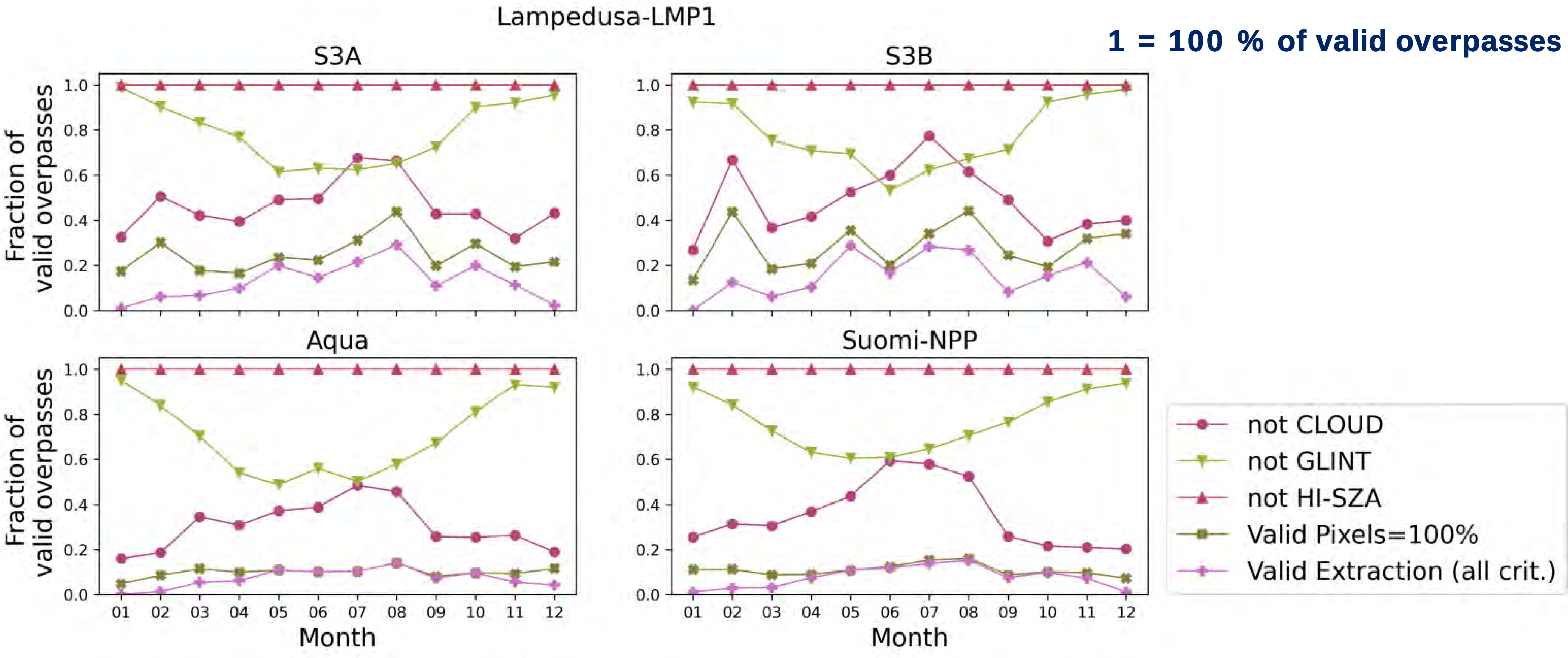
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

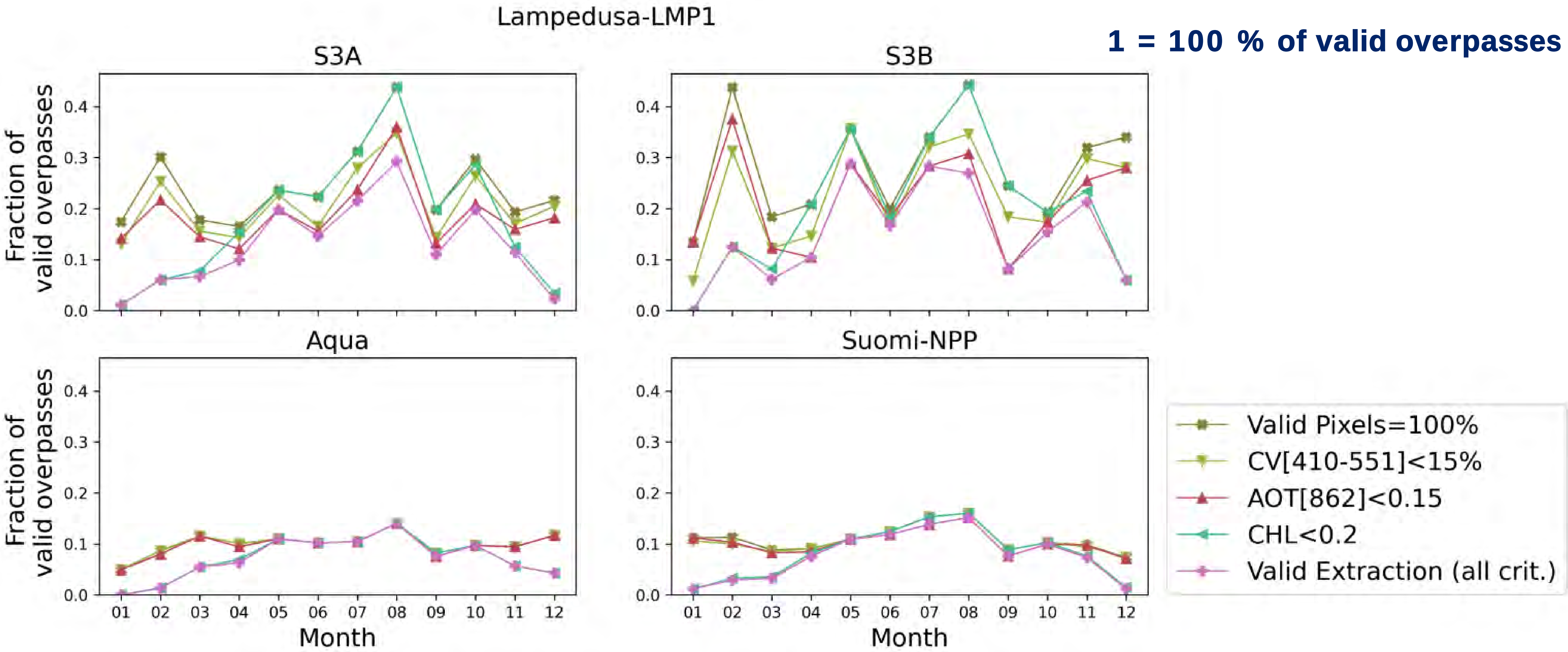
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

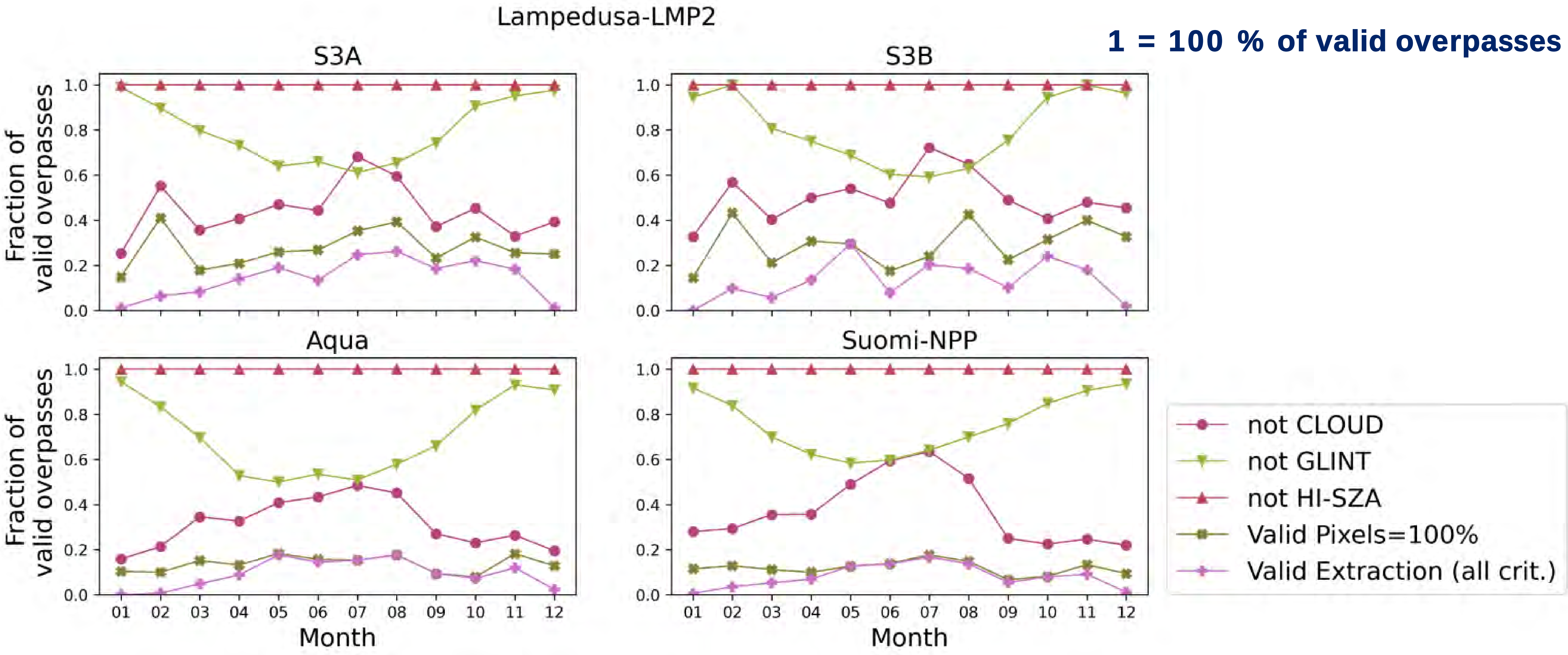
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

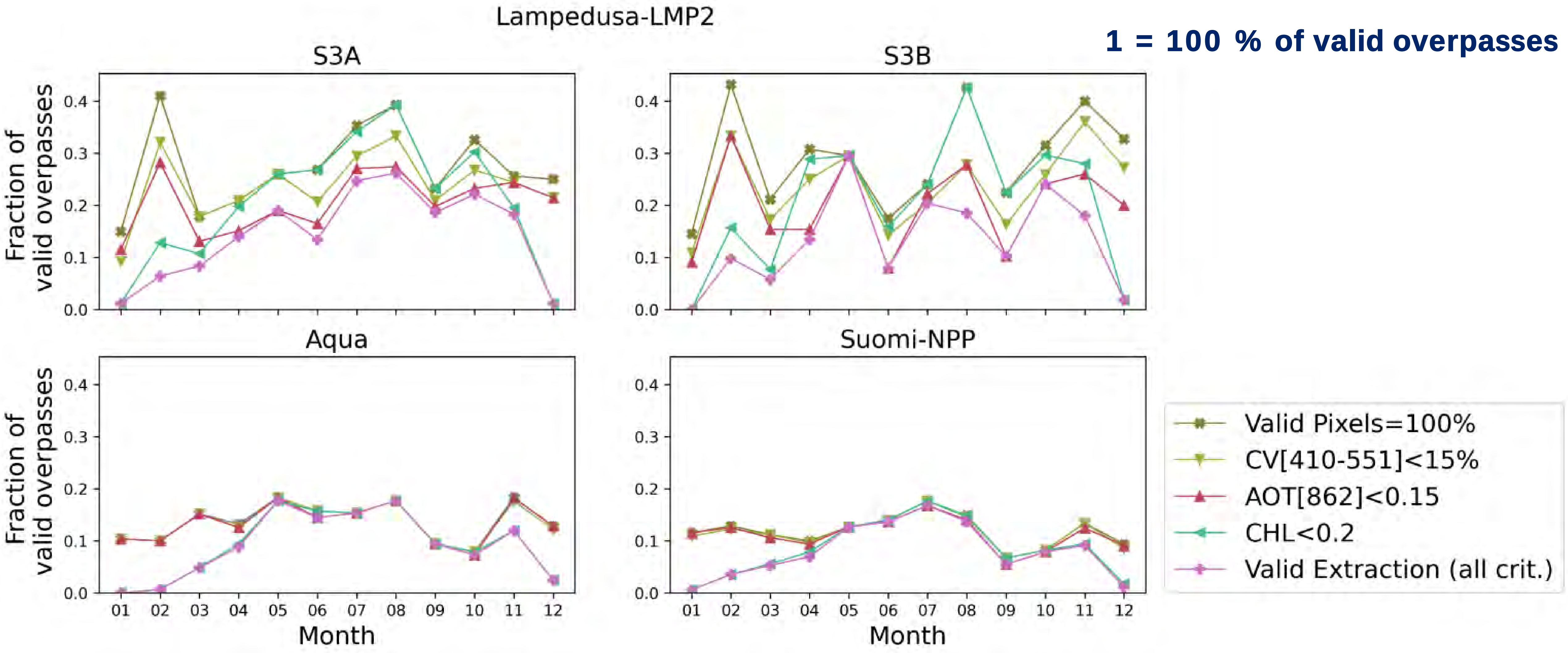
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

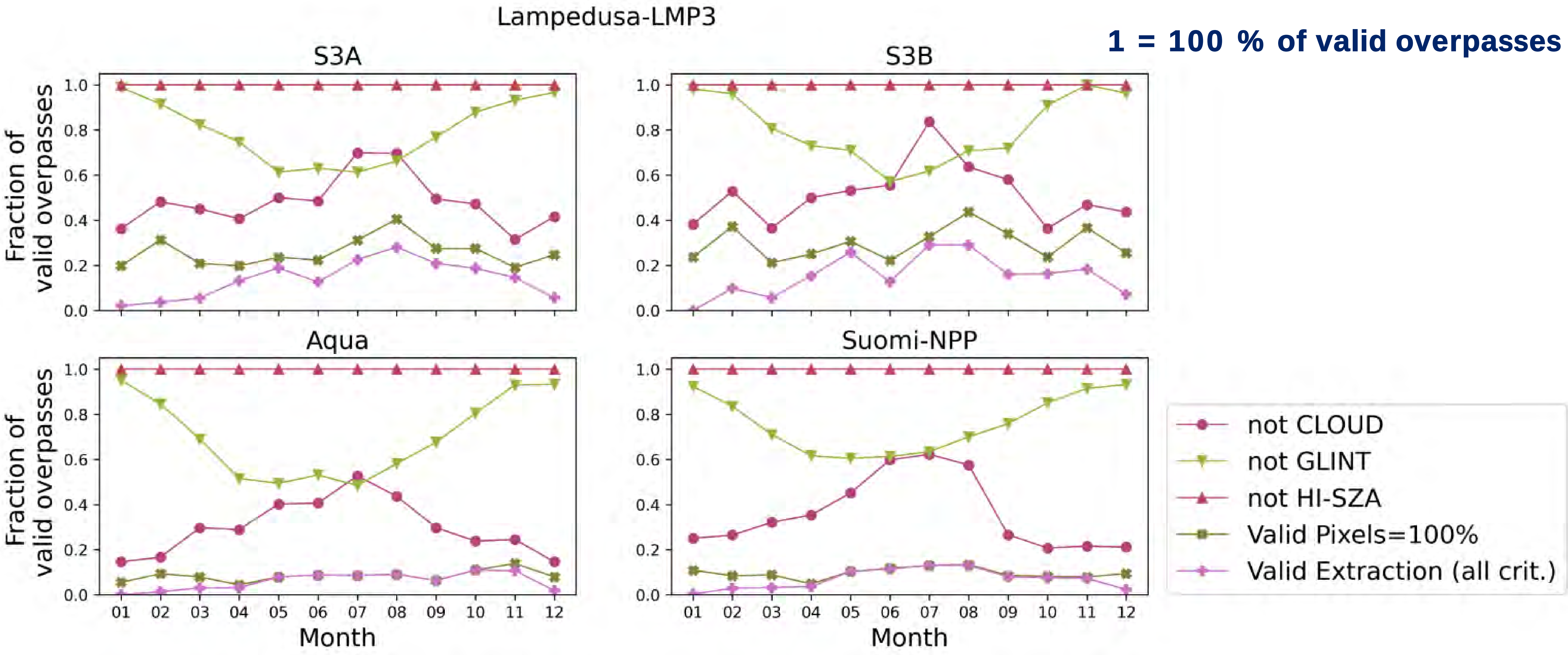
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

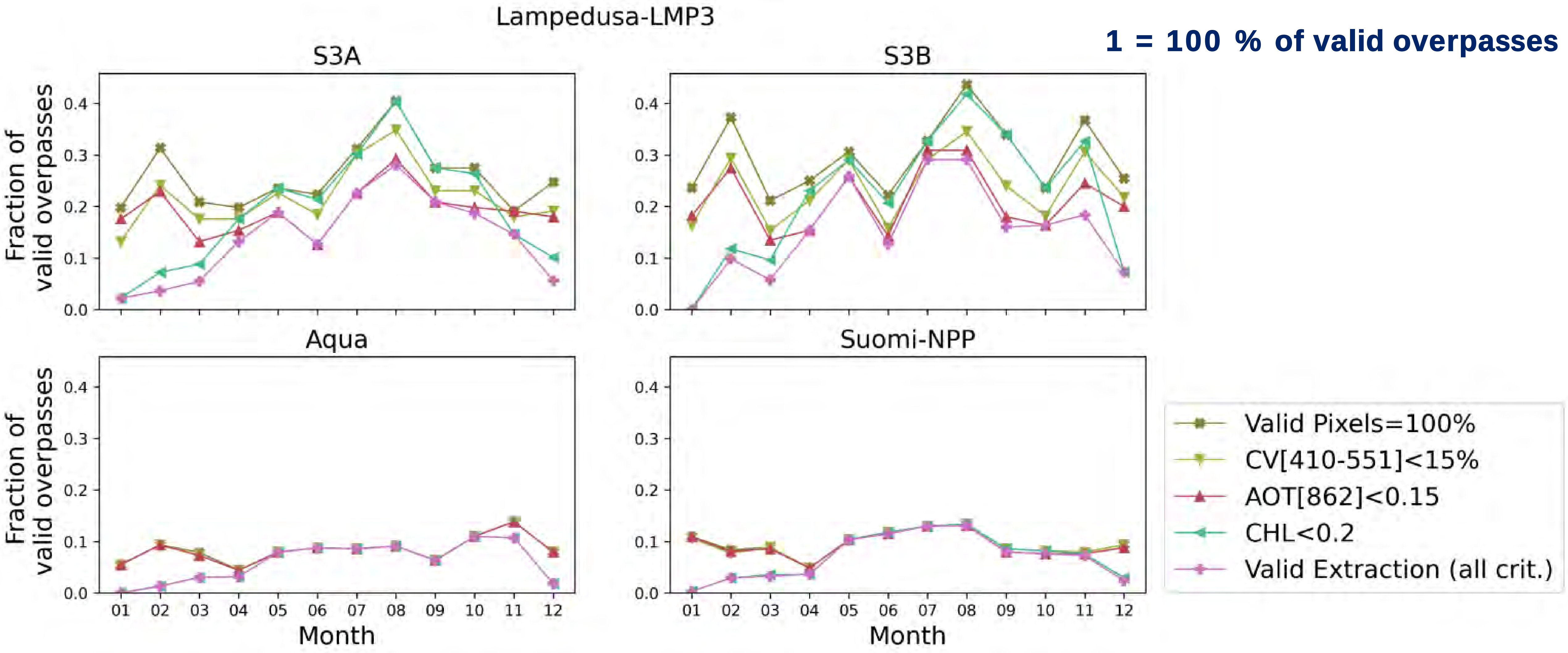
1 = 100 % of valid overpasses



EUMETSAT

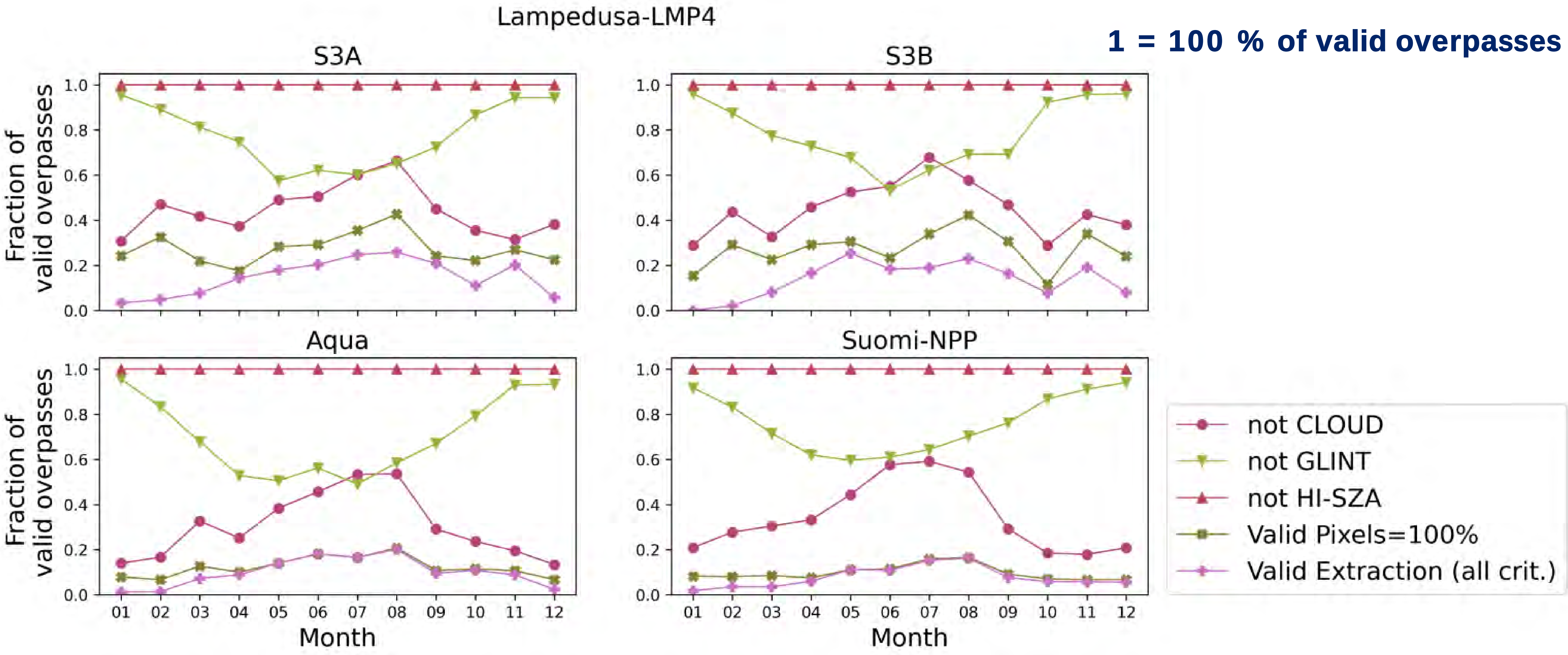
Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



Monthly prevalence of valid extractions (SVC_VIS_PP)

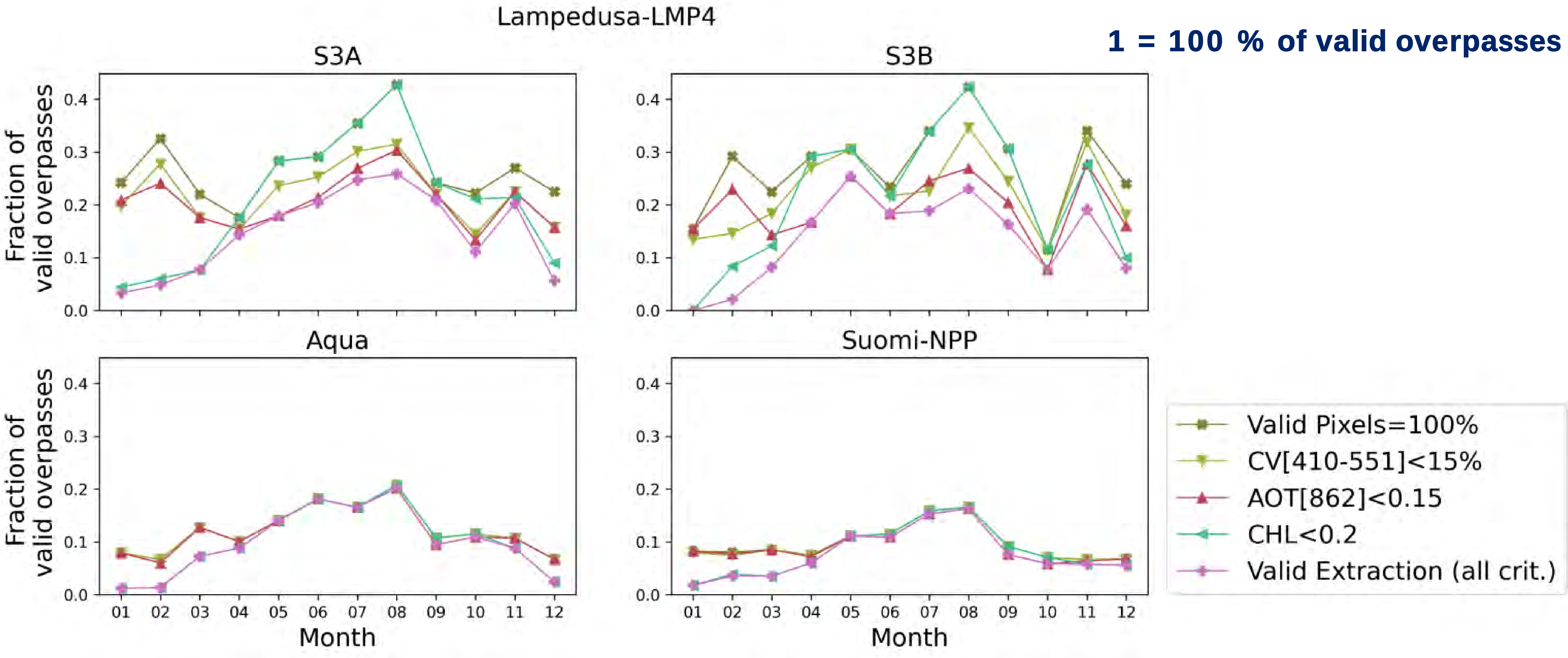
1 = 100 % of valid overpasses



EUMETSAT

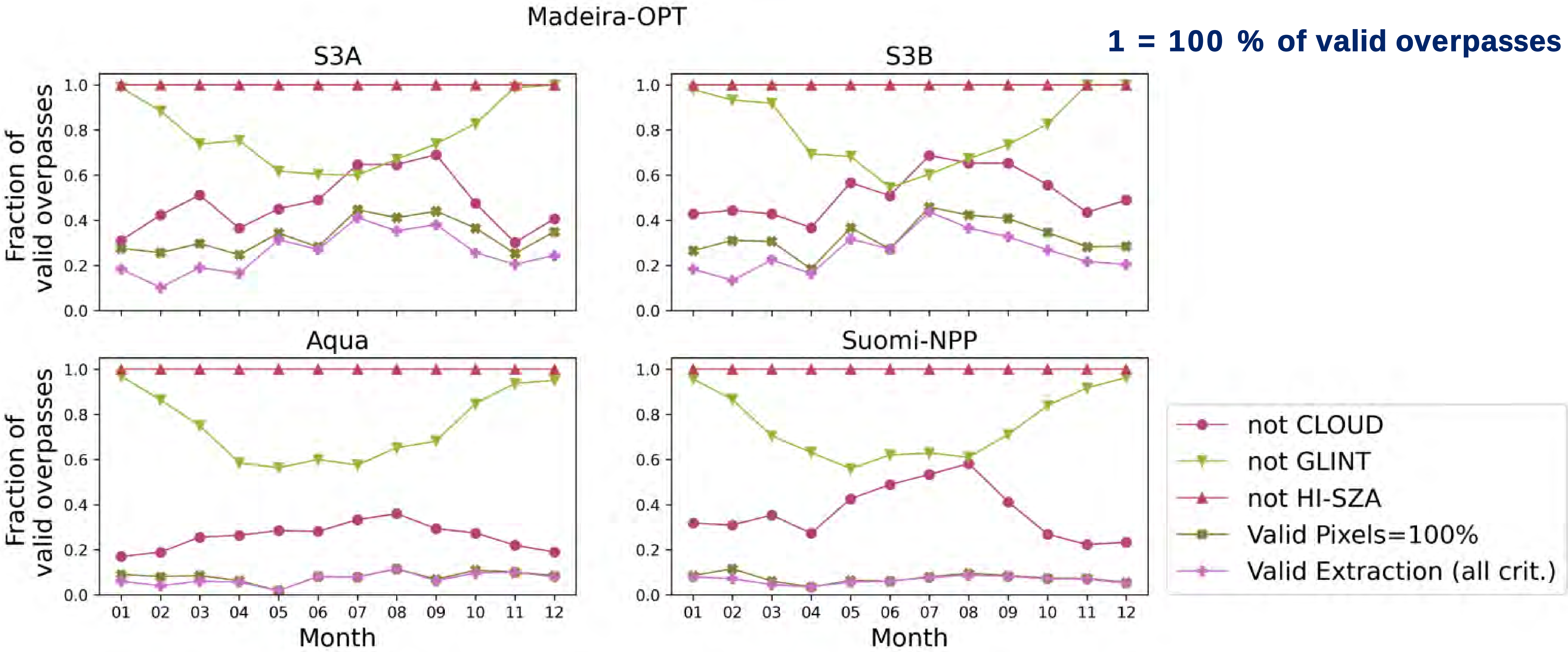
Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



Monthly prevalence of valid extractions (SVC_VIS_PP)

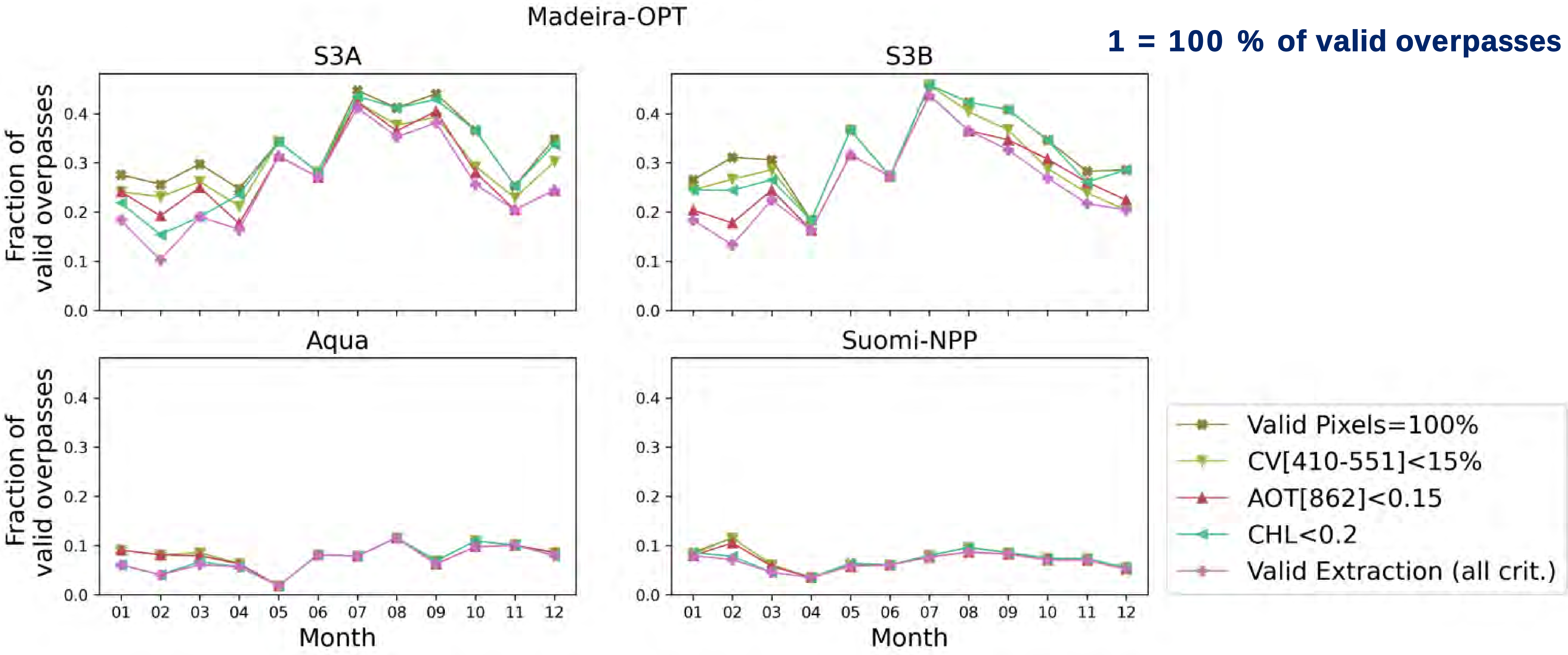
1 = 100 % of valid overpasses



EUMETSAT

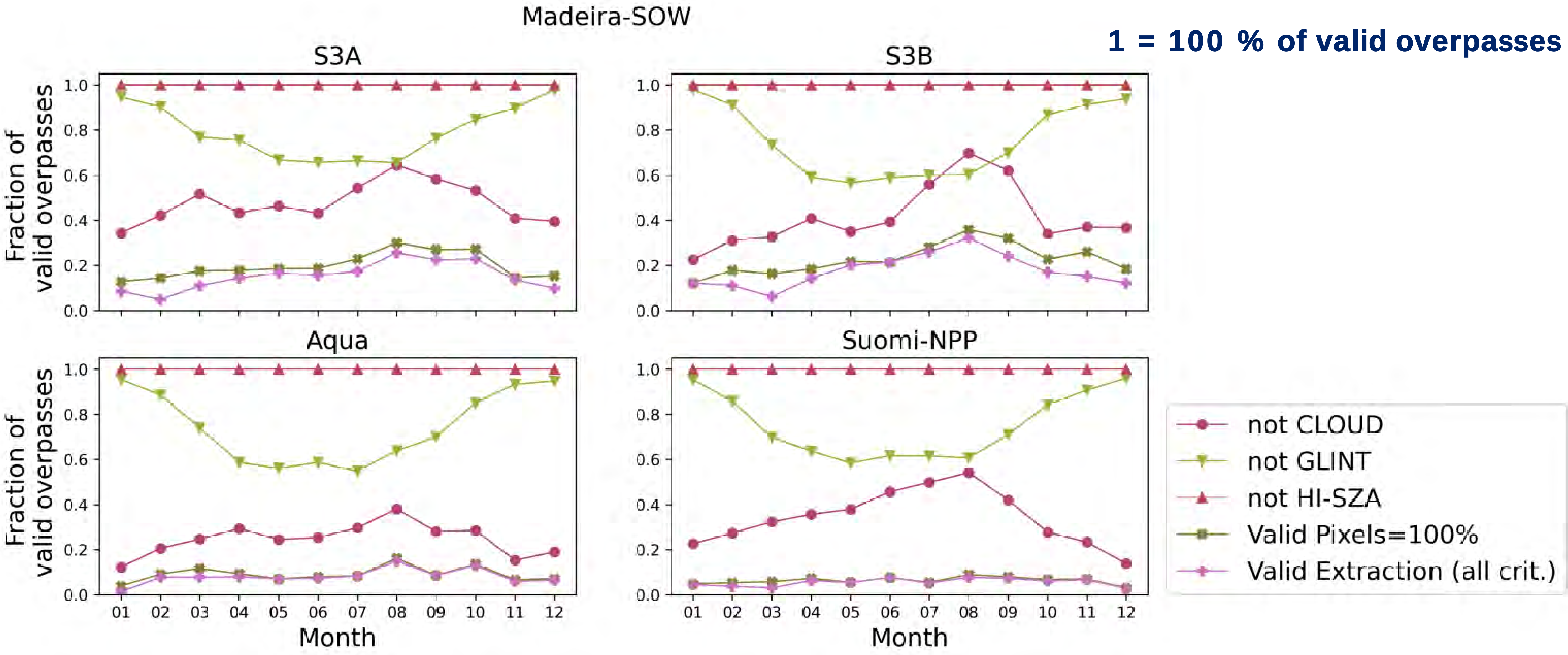
Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



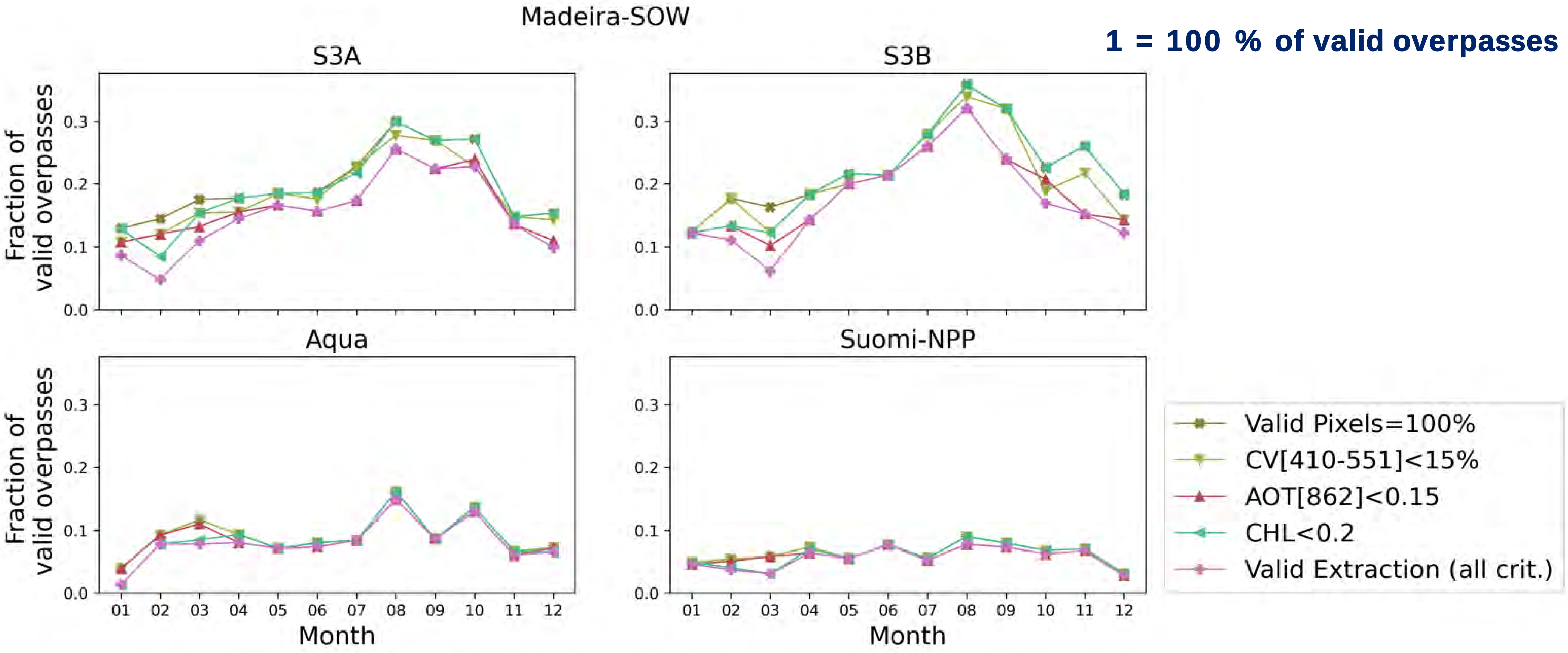
Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



Monthly prevalence of valid extractions (SVC_VIS_PP)

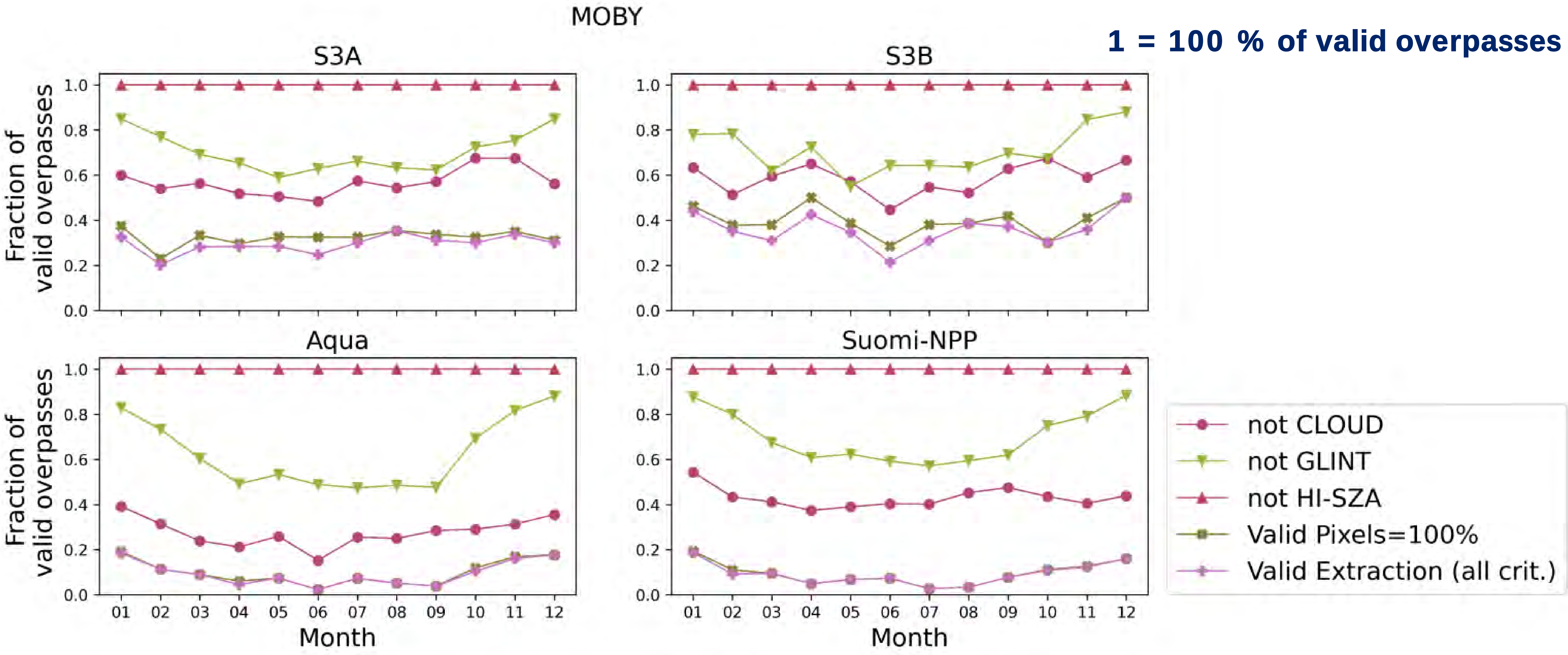
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

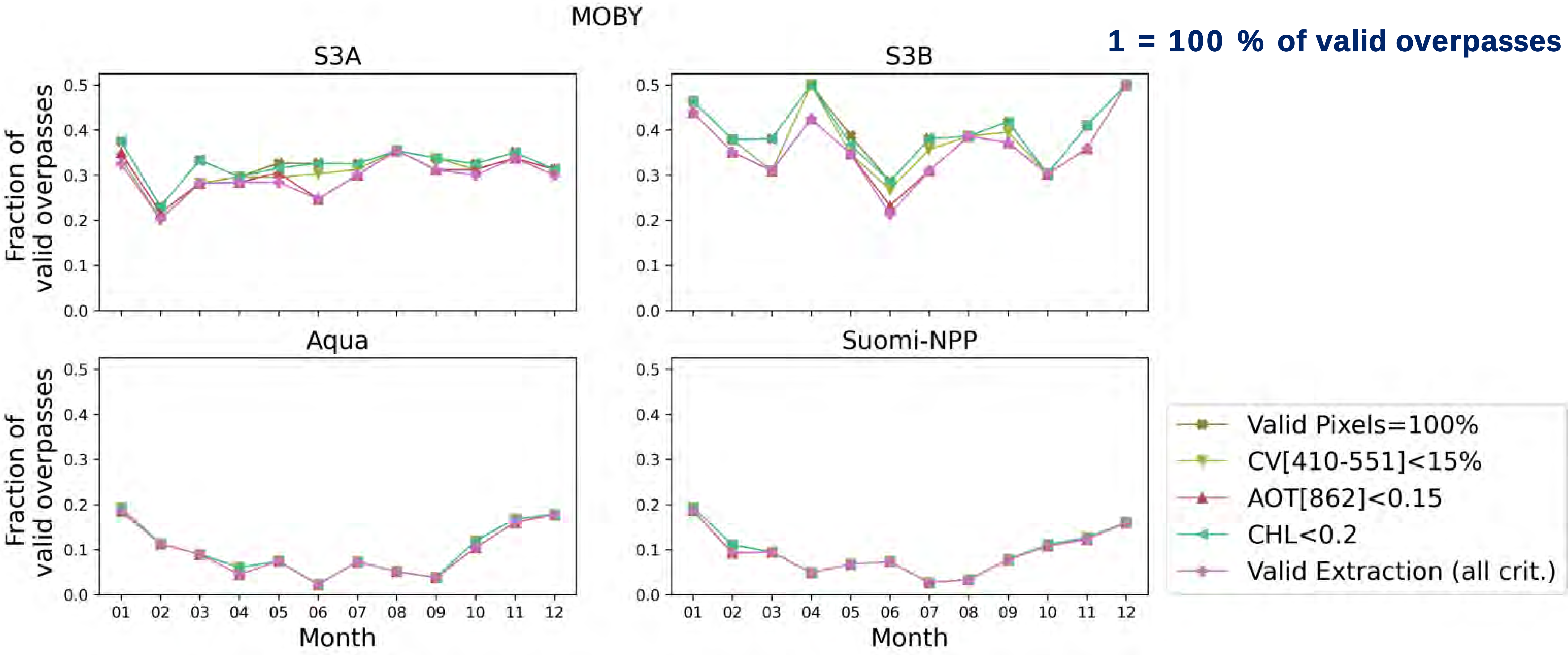
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

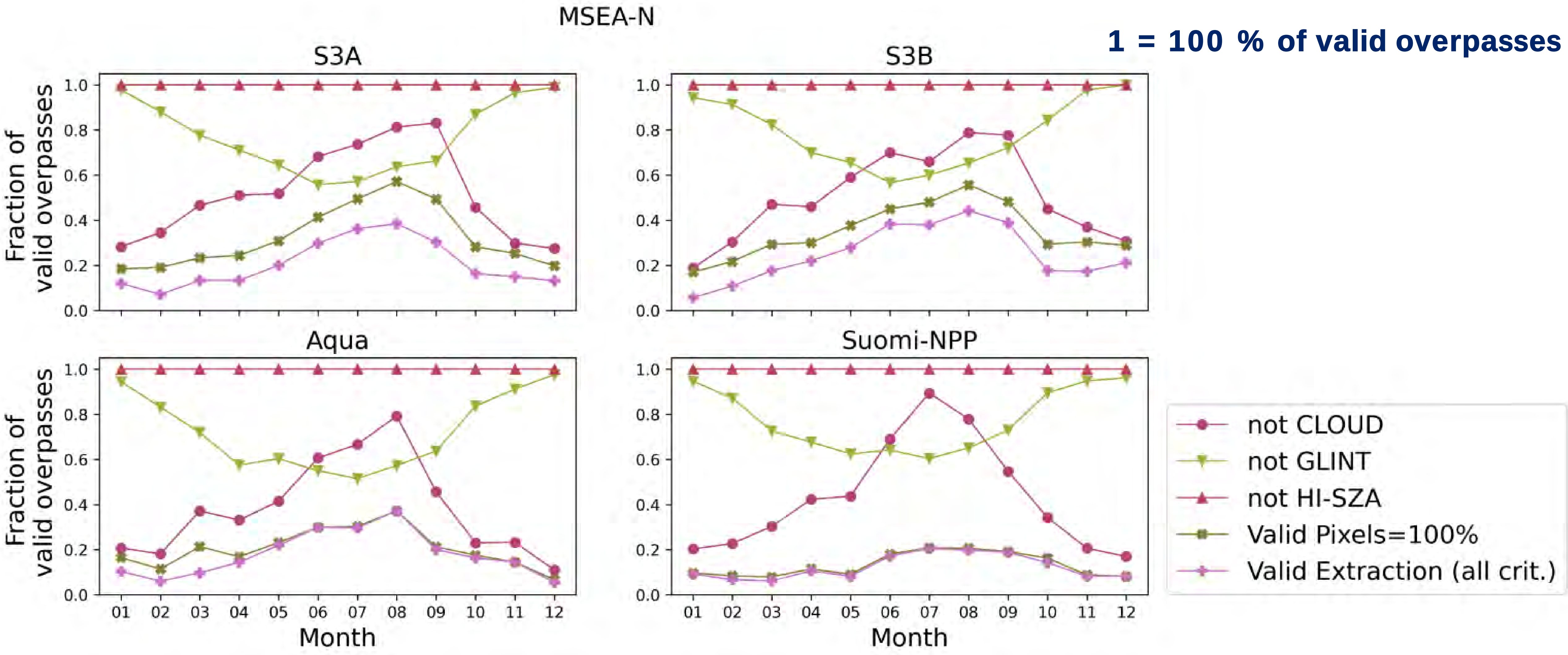
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

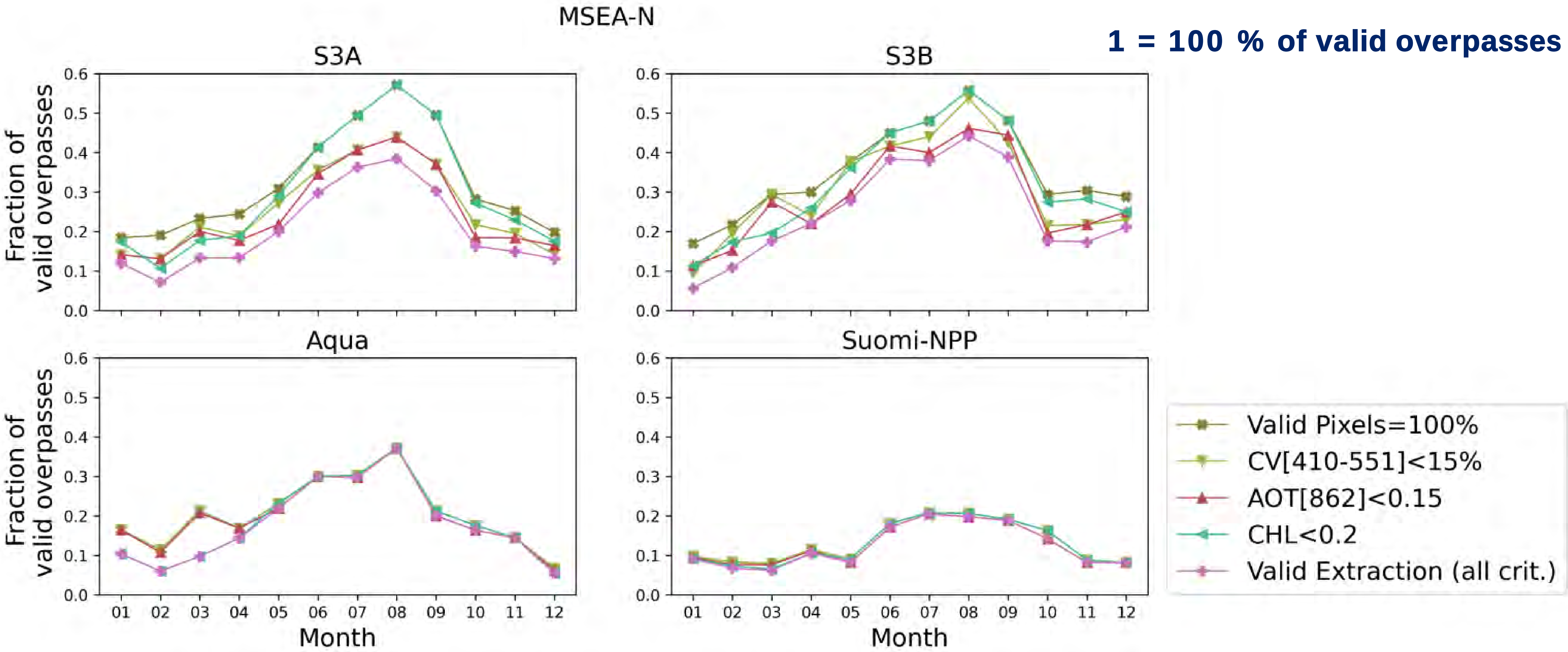
1 = 100 % of valid overpasses



EUMETSAT

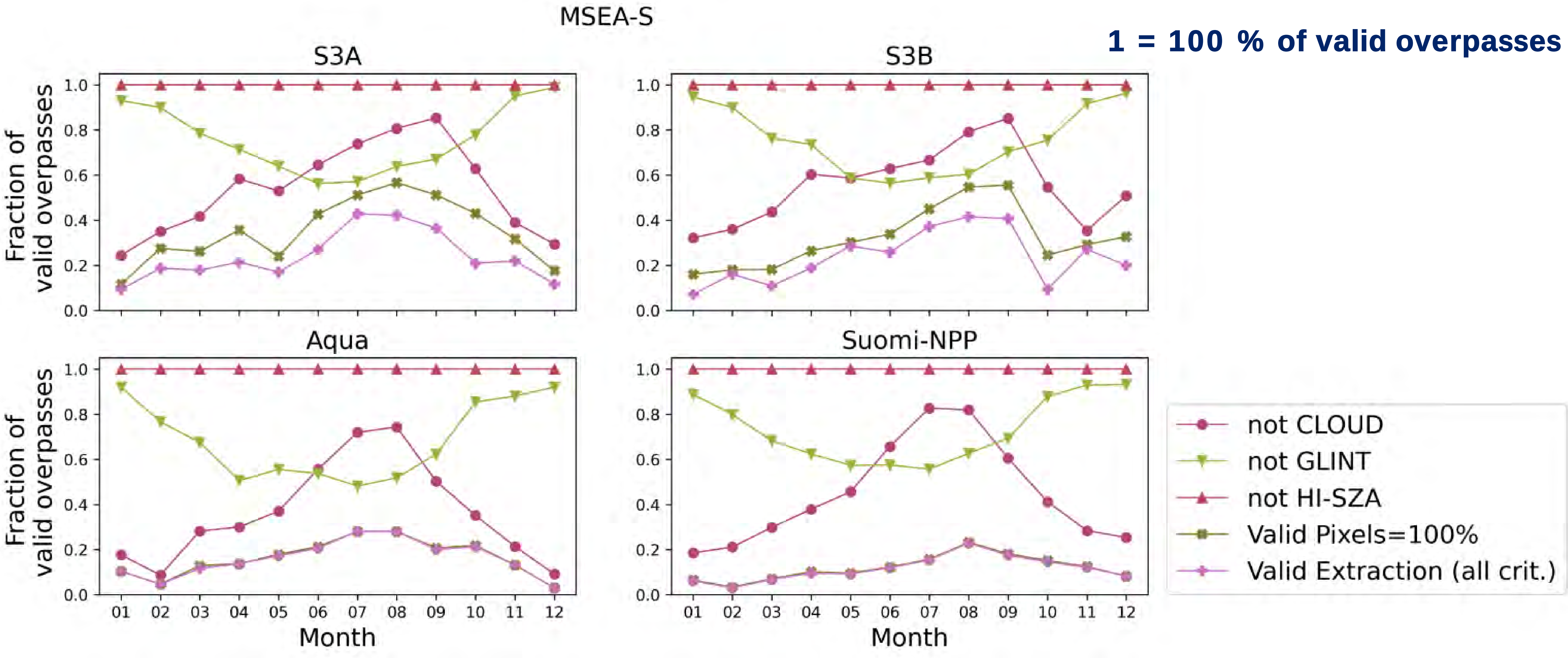
Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



Monthly prevalence of valid extractions (SVC_VIS_PP)

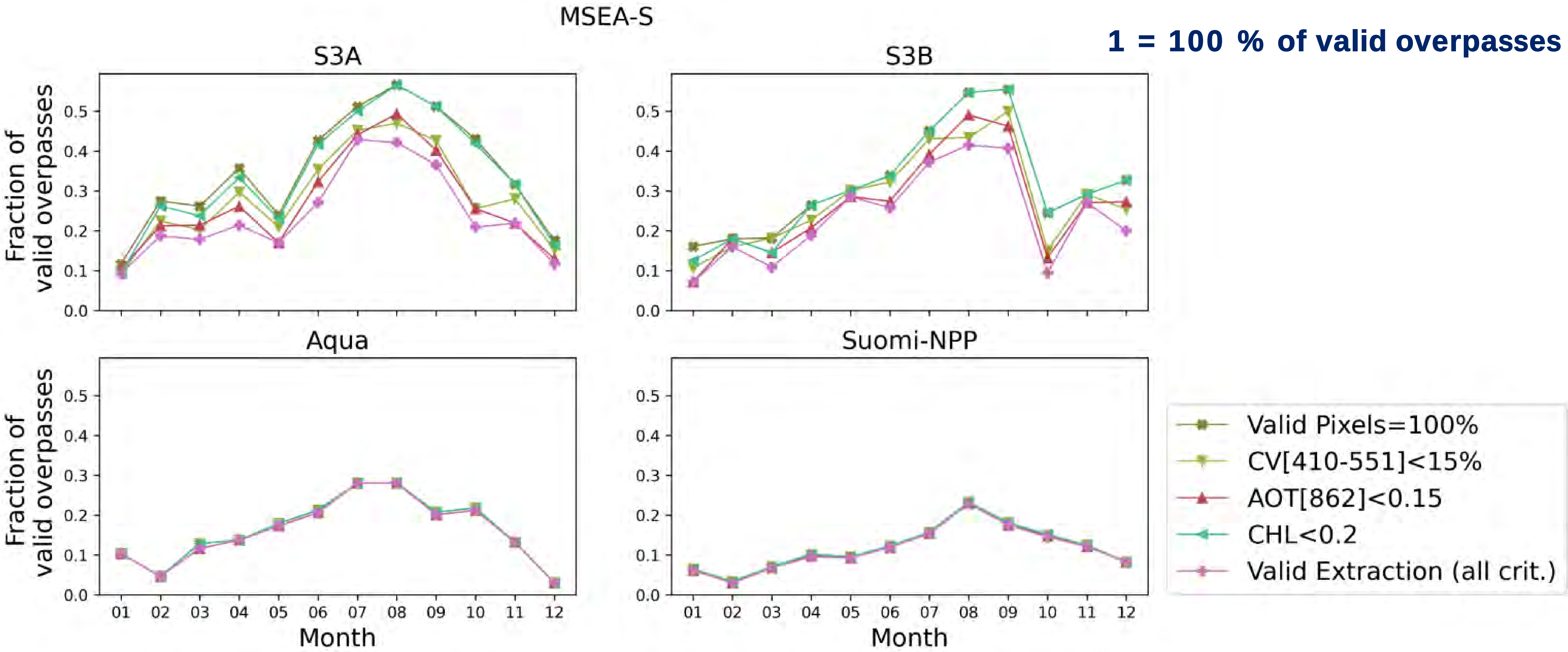
1 = 100 % of valid overpasses



EUMETSAT

Monthly prevalence of valid extractions (SVC_VIS_PP)

1 = 100 % of valid overpasses



EUMETSAT

Seasonal variability (unscreened/screened according to **SVC_VIS_PP**)

SVC_VIS_PP: Distributions of ρ_w and CHL

Sarle's coefficient (S)

S ∈ [0 - 1]

- If **S** > 0.55 → Distribution exhibits statistically-significant **bimodal** or **heavily-skewed** monomodal behaviour.
- If **S** ≤ 0.55 → Distribution is mainly **monomodal**.

Theoretical expression

$$\sigma = \frac{\gamma^2 + 1}{\kappa}$$

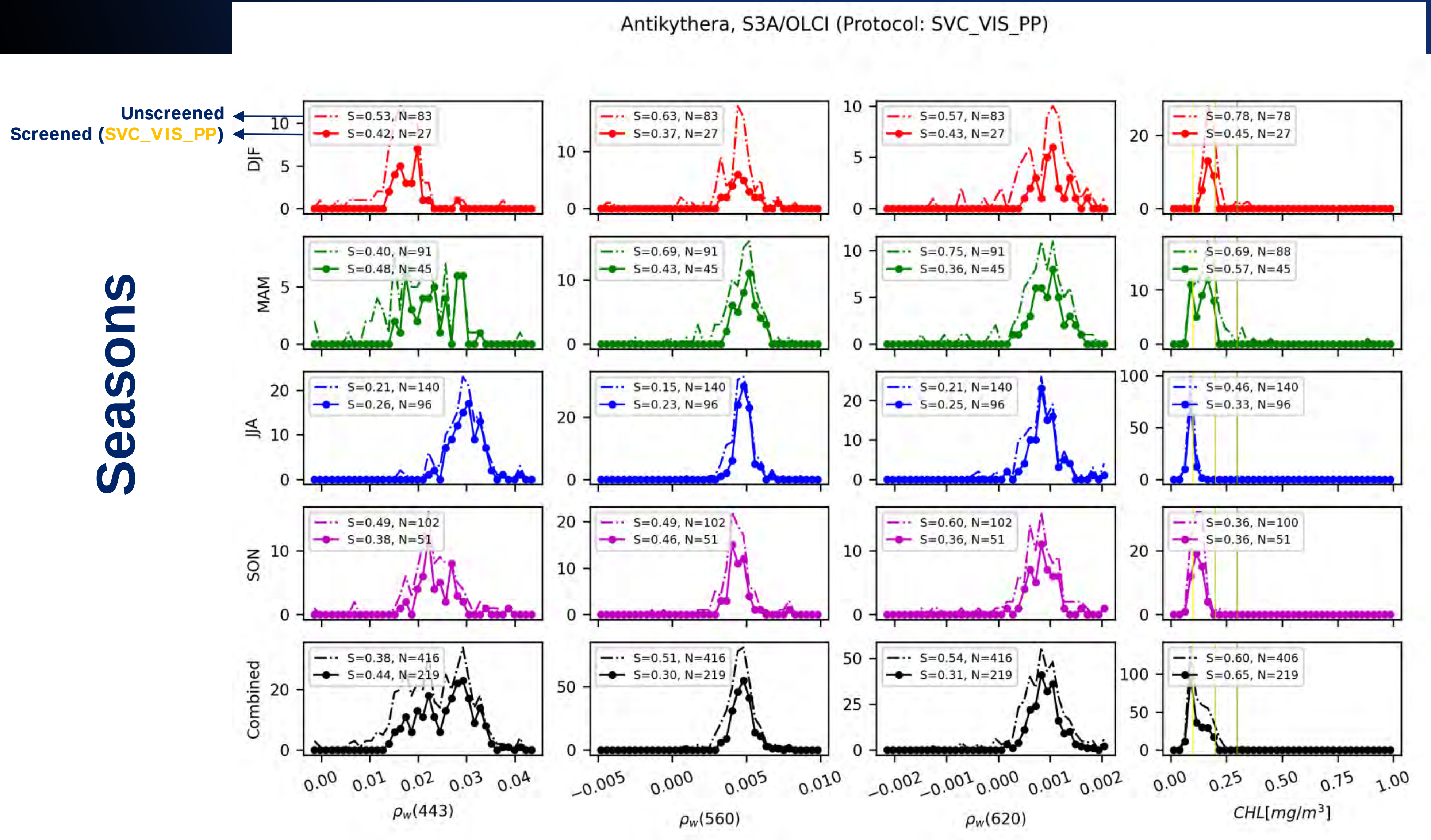
γ → Skewness
κ → Kurtosis

Finite sample expression

$$S = \frac{g^2 + 1}{k + \frac{3(n-1)^2}{(n-2)(n-3)}}$$

g → Sample skewness
k → Sample excess kurtosis
n → Sample size

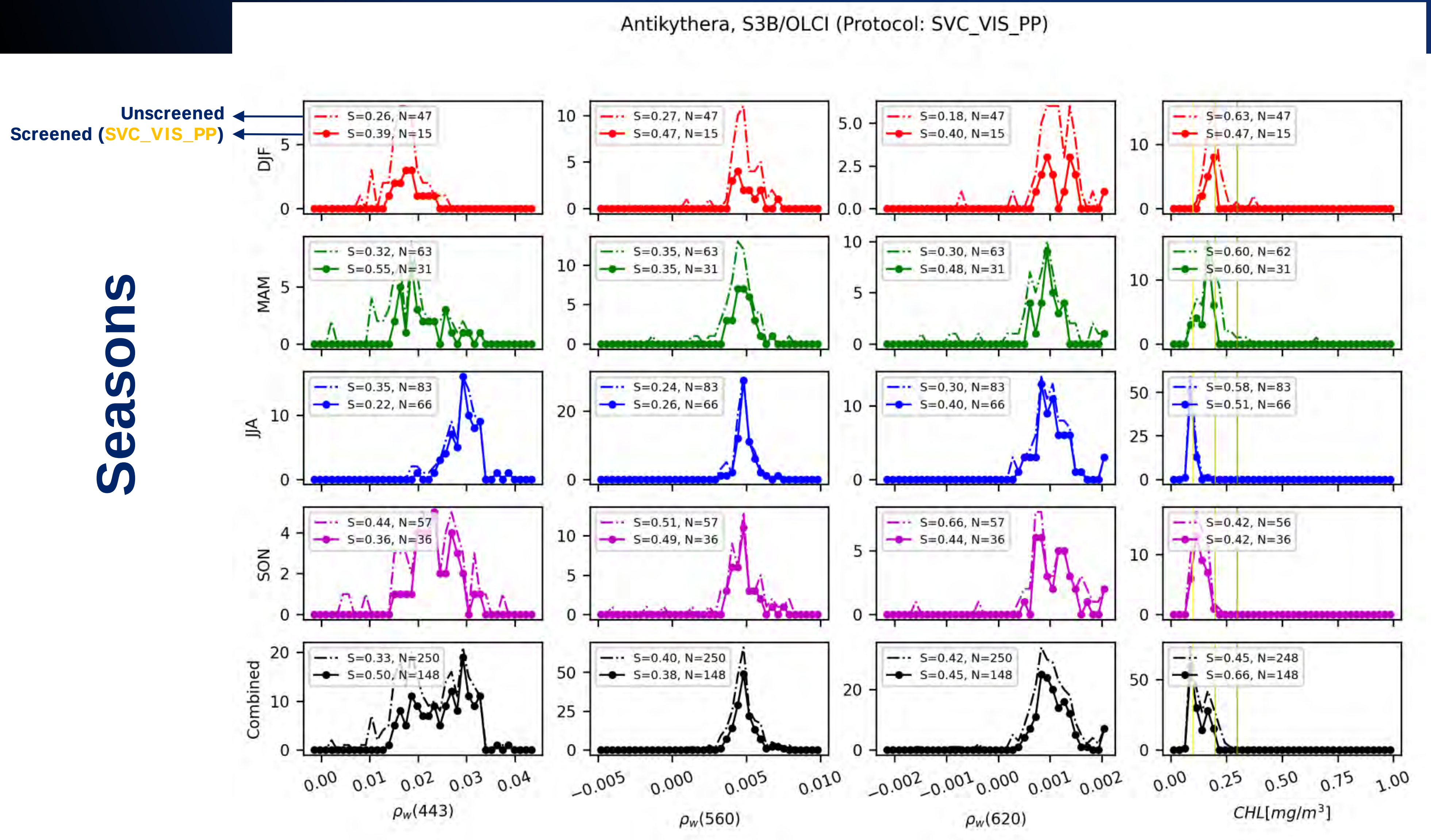
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Seasons

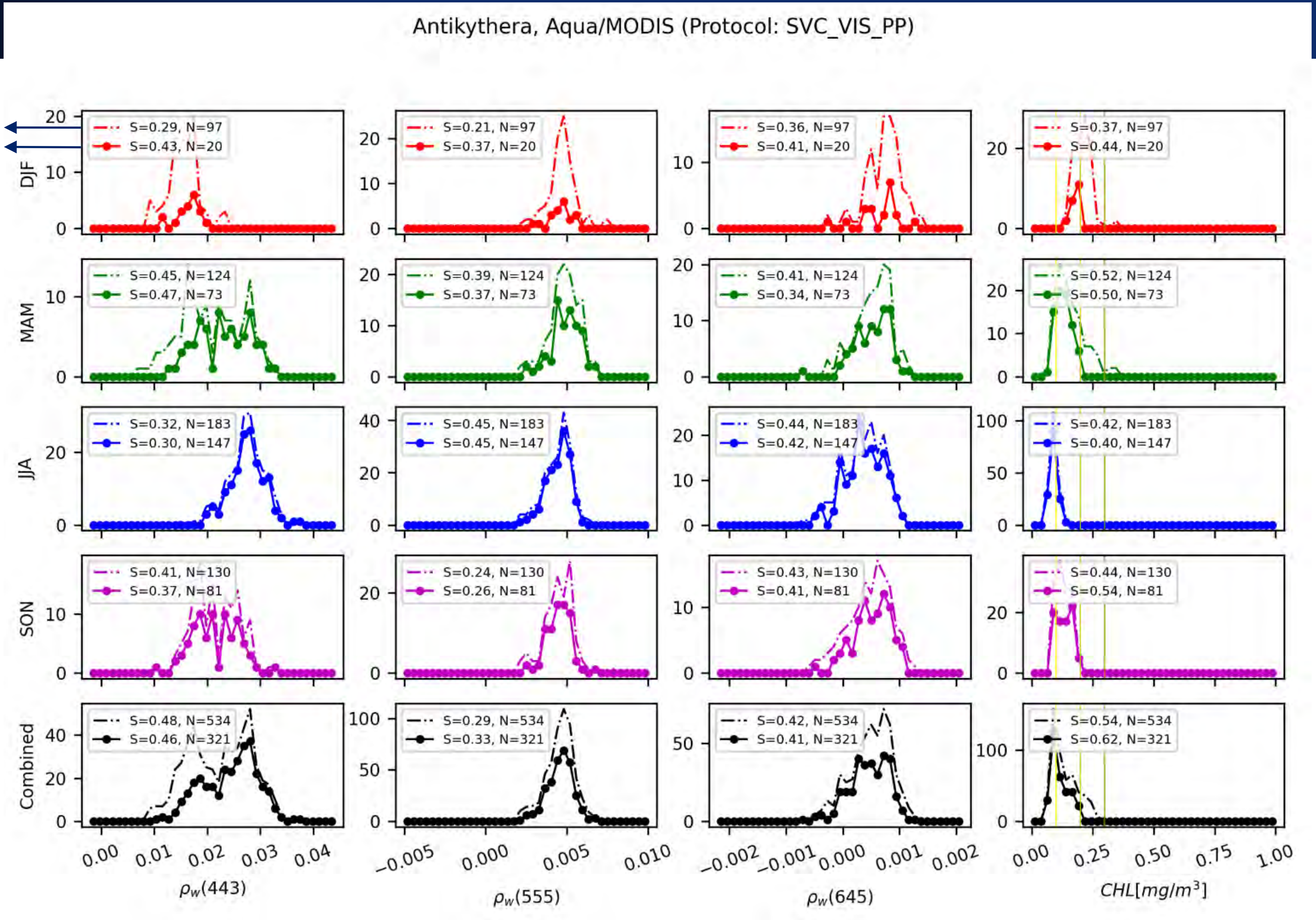


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

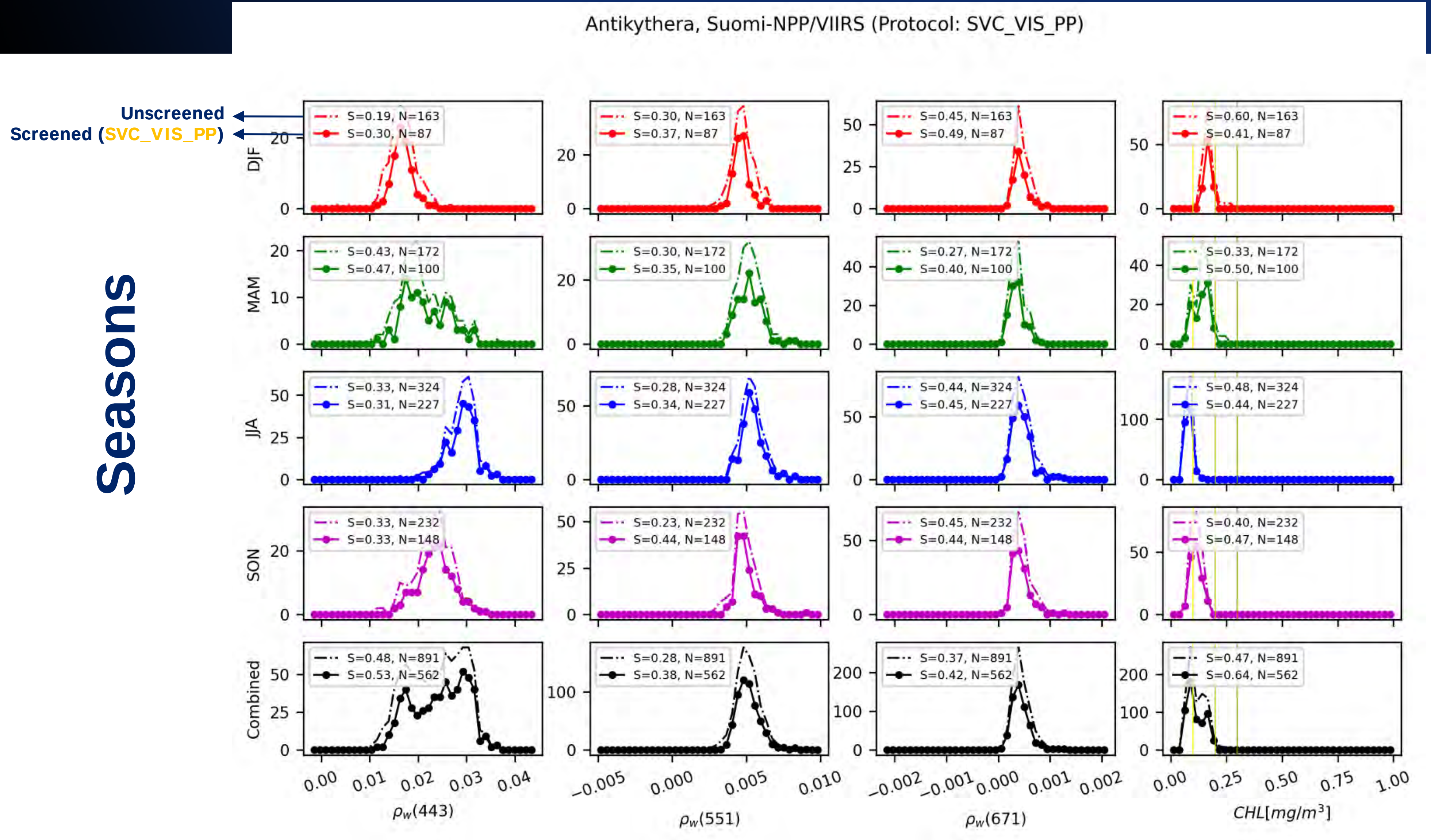
Unscreened
Screened (SVC_VIS_PP)

Seasons



EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

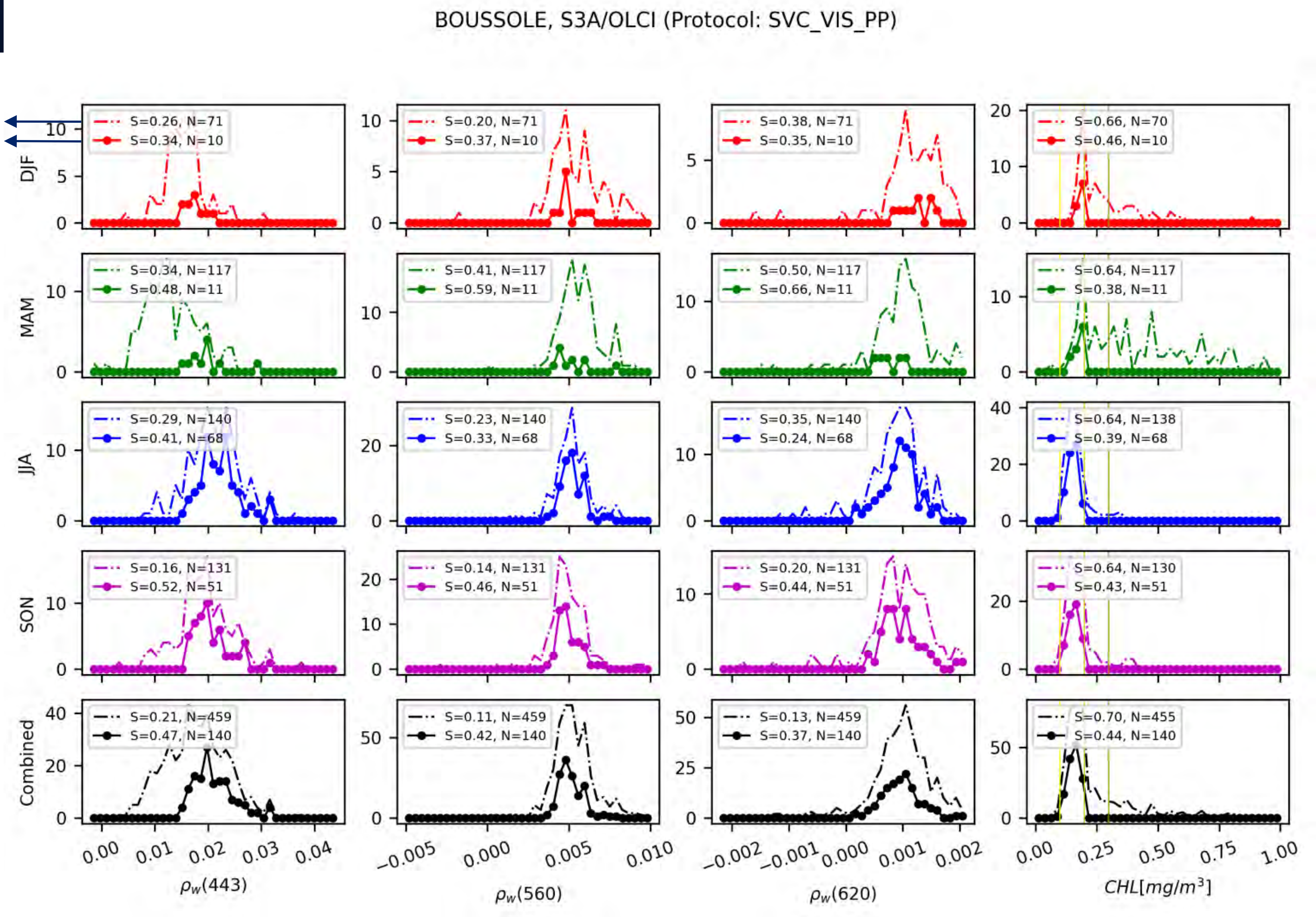


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

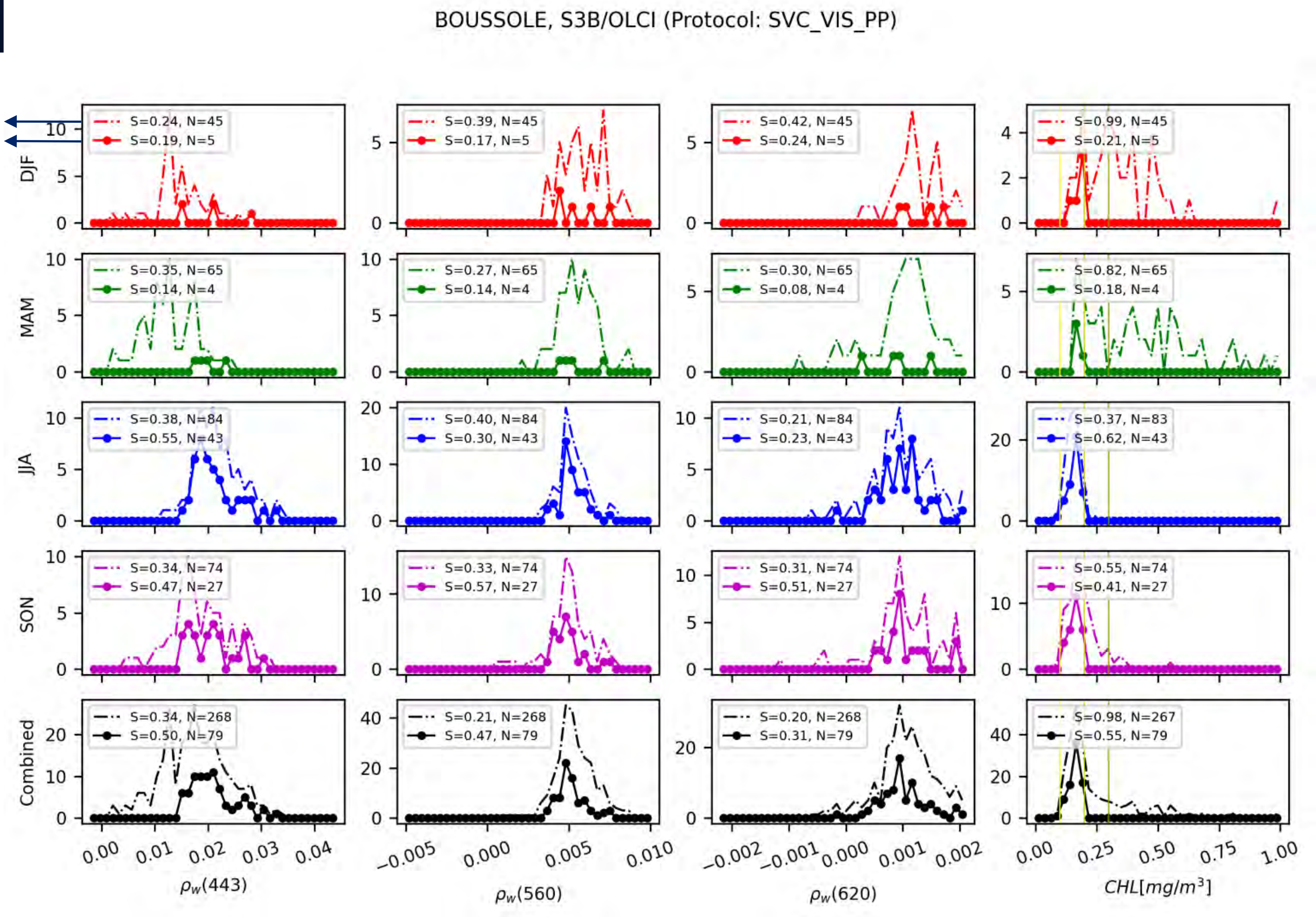


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

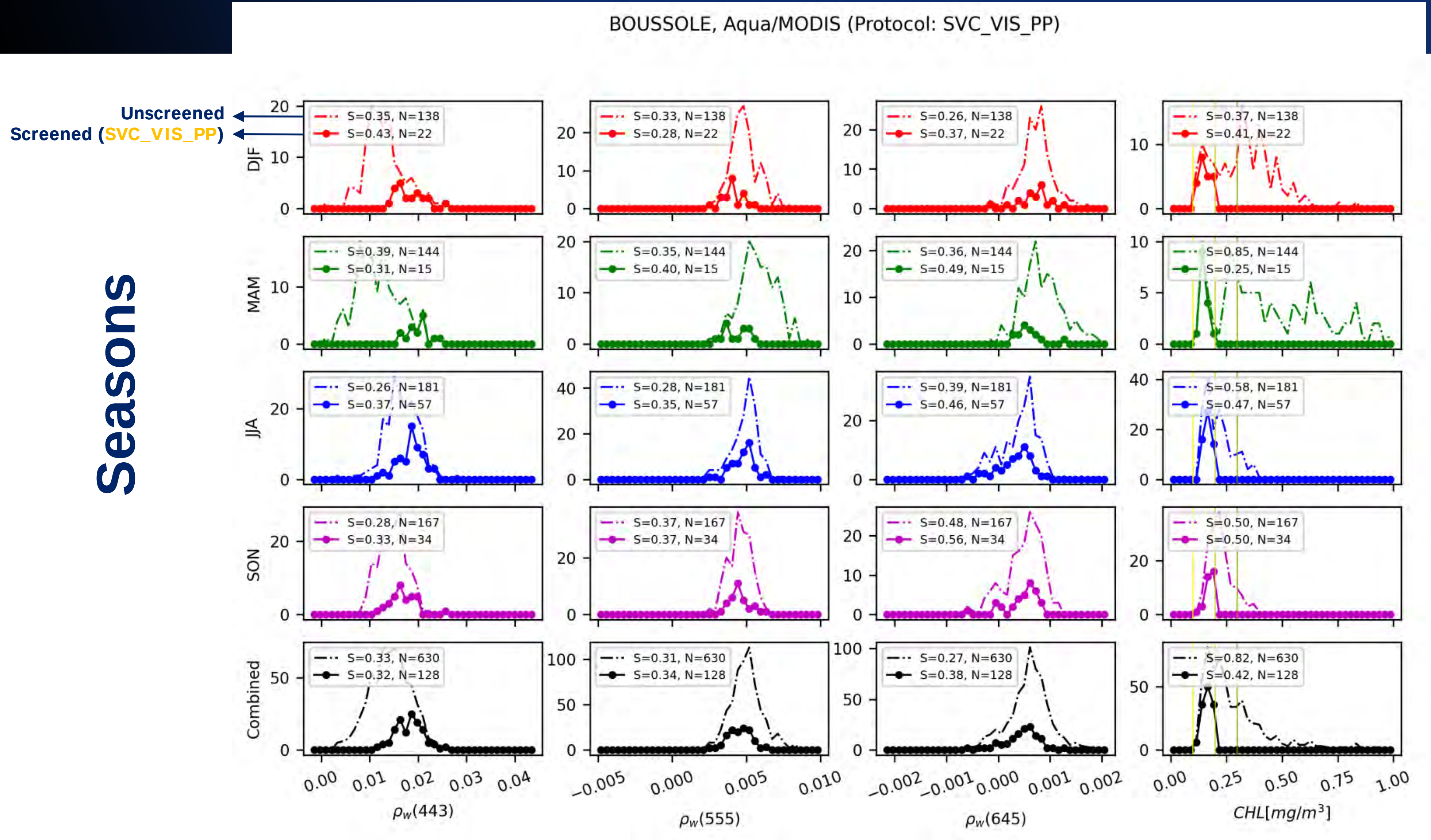
Unscreened
Screened (SVC_VIS_PP)

Seasons



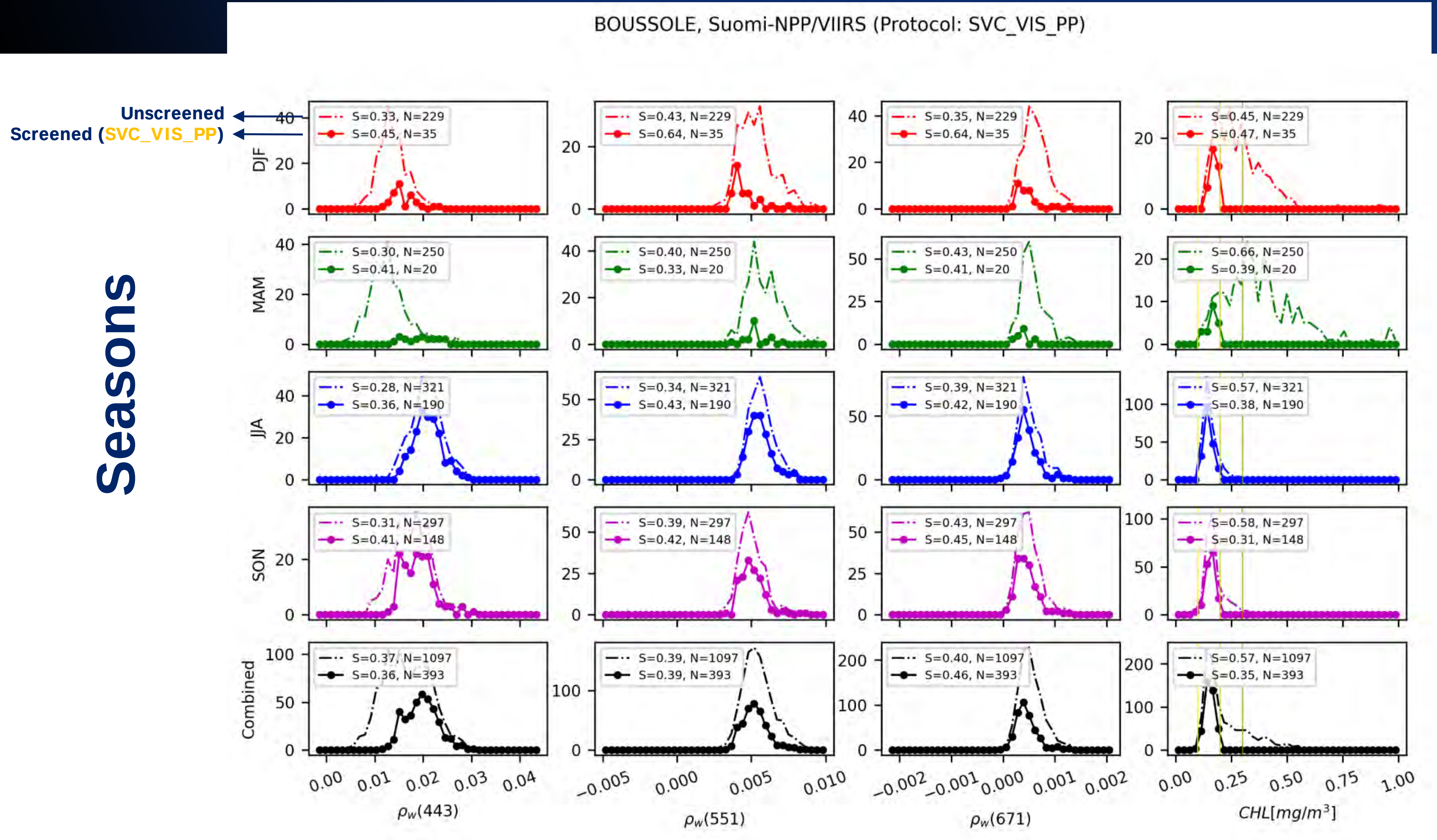
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

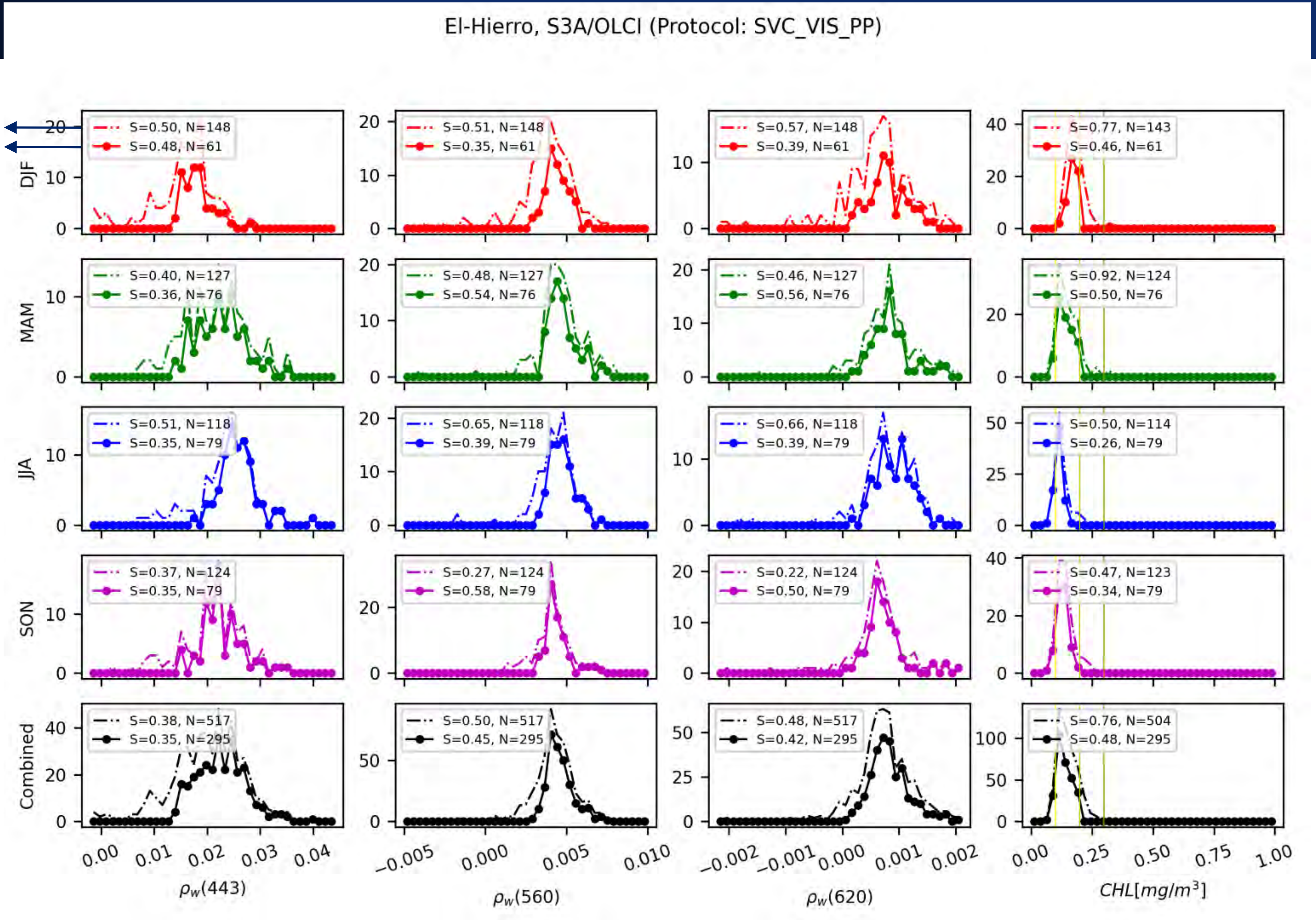


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

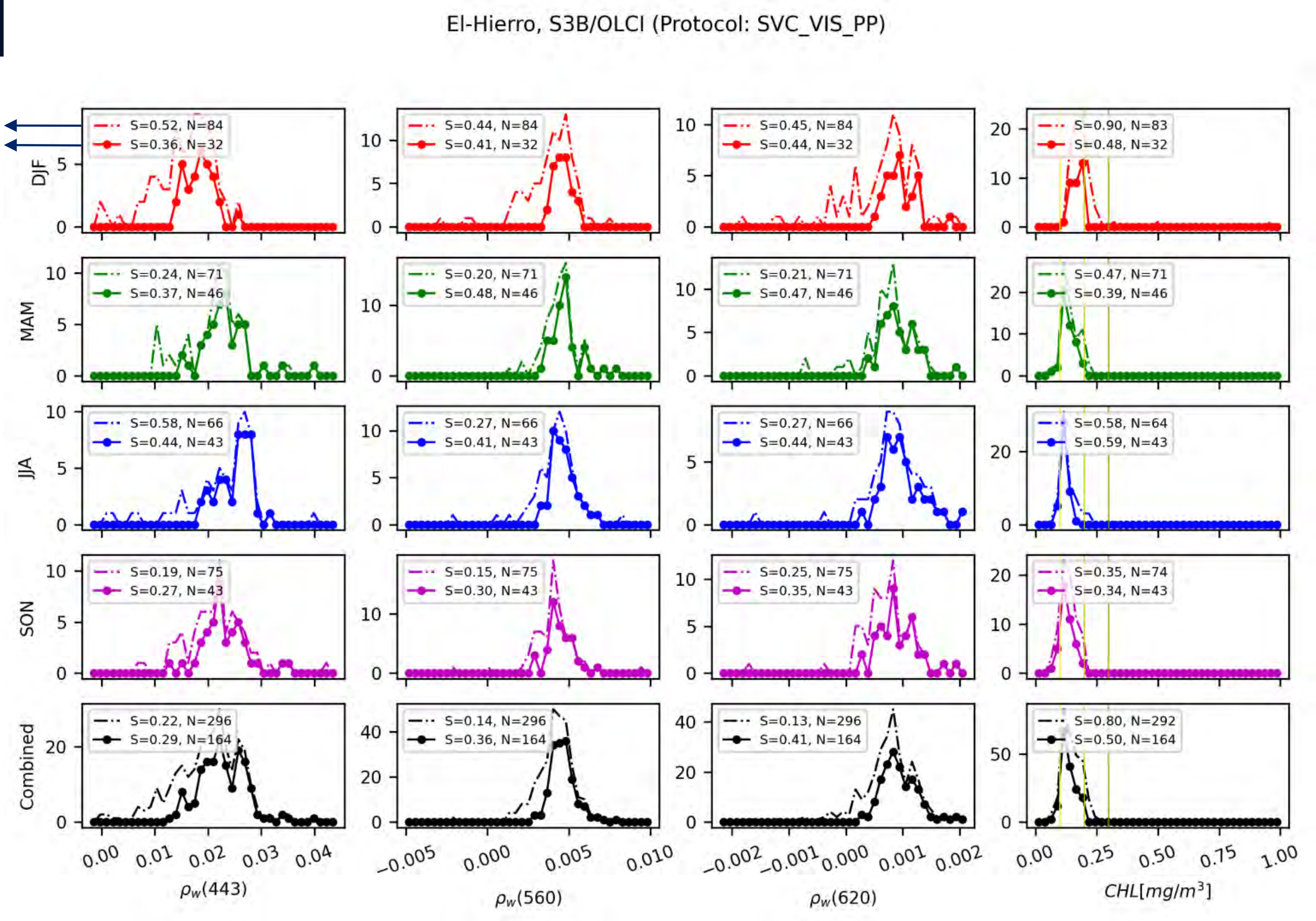


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

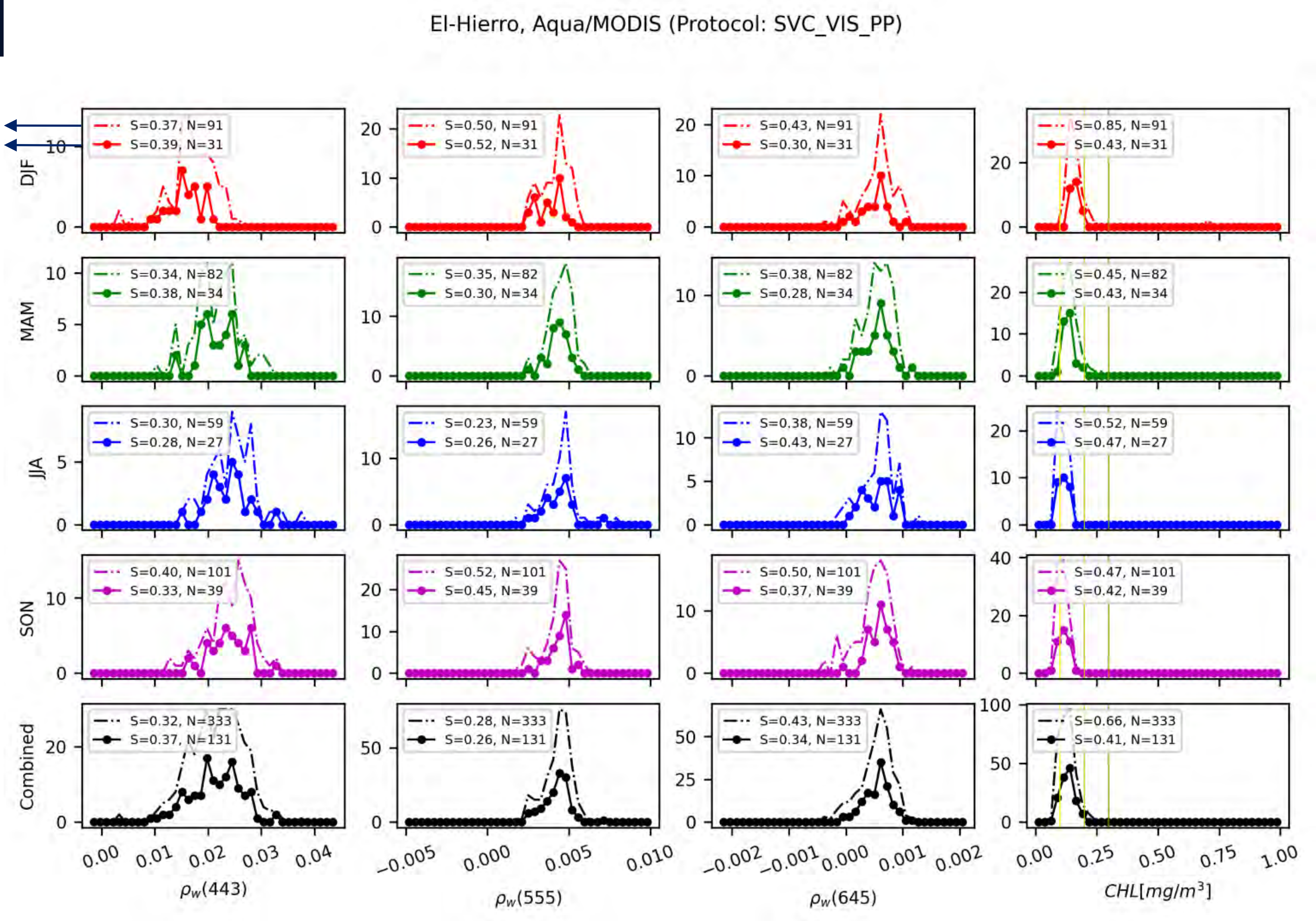


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

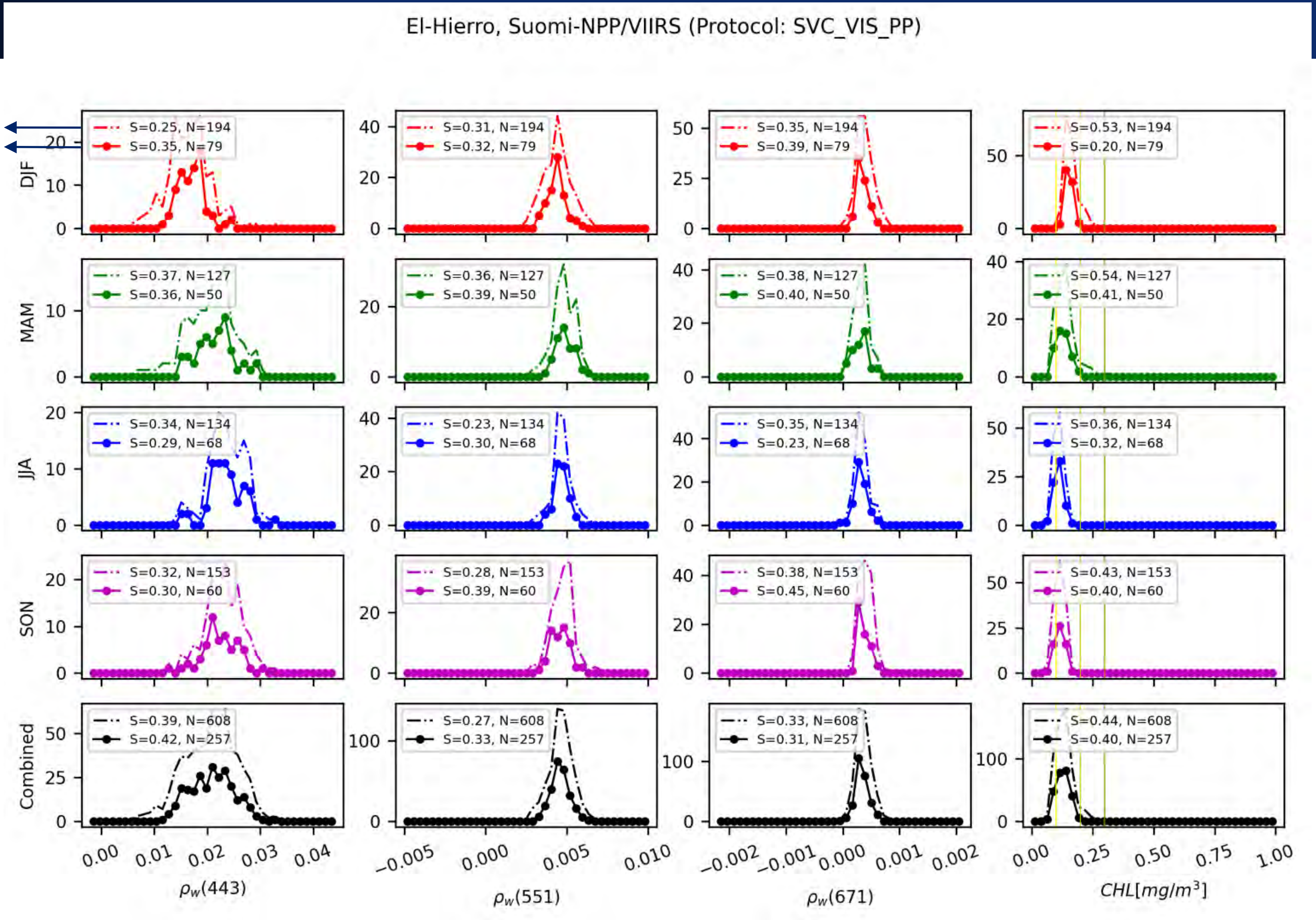


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons



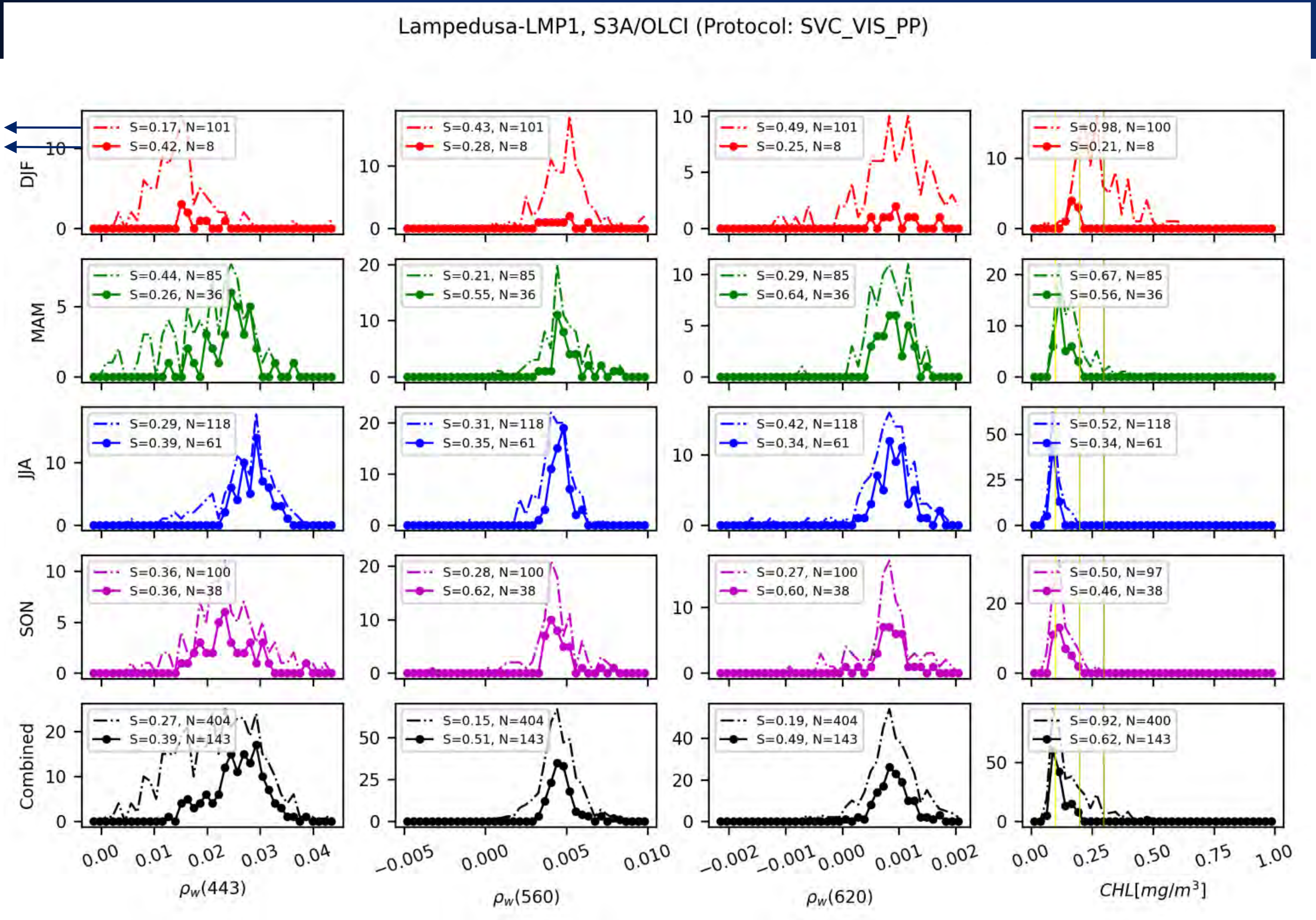
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened

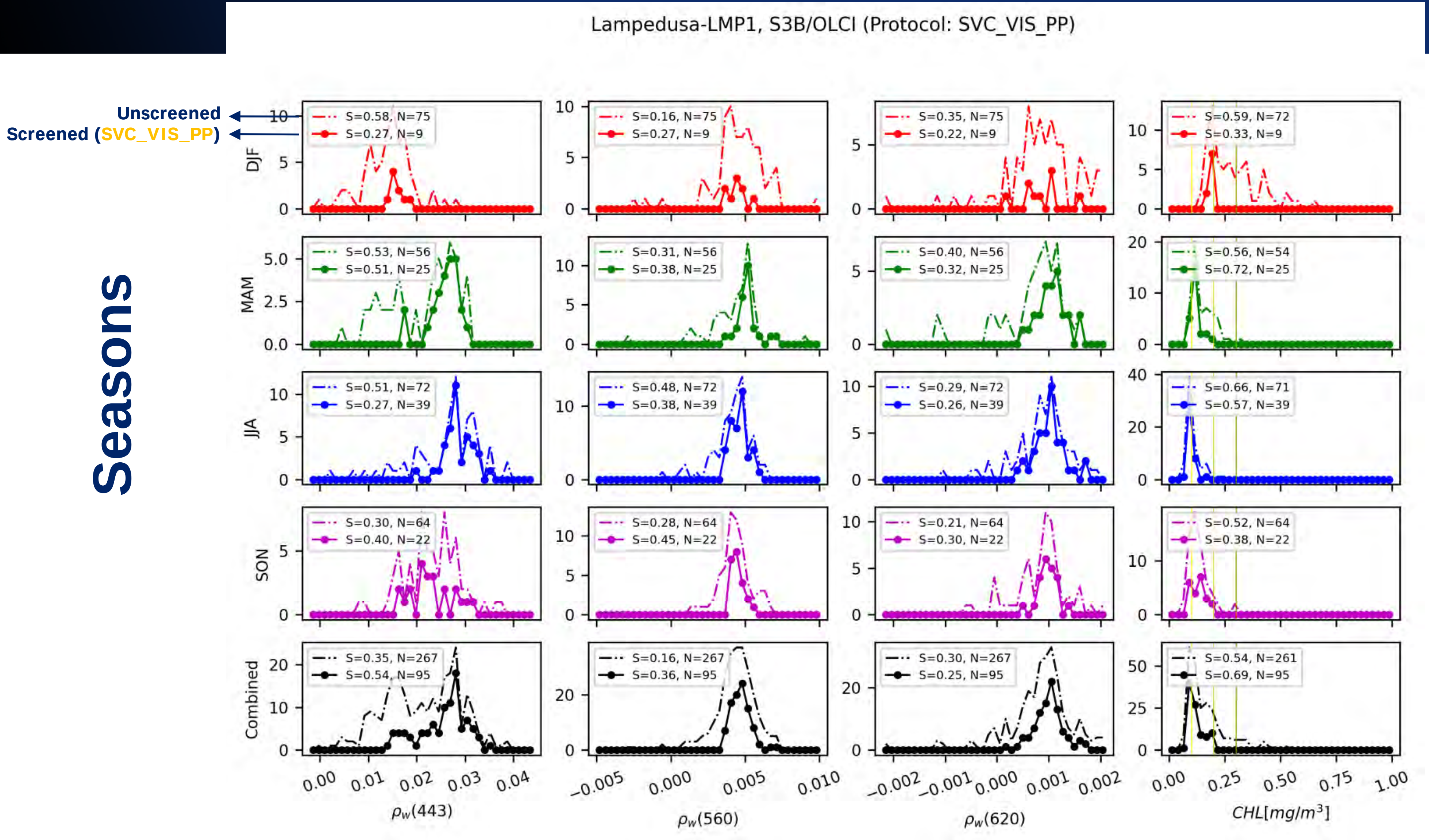
Screened (SVC_VIS_PP)

Seasons

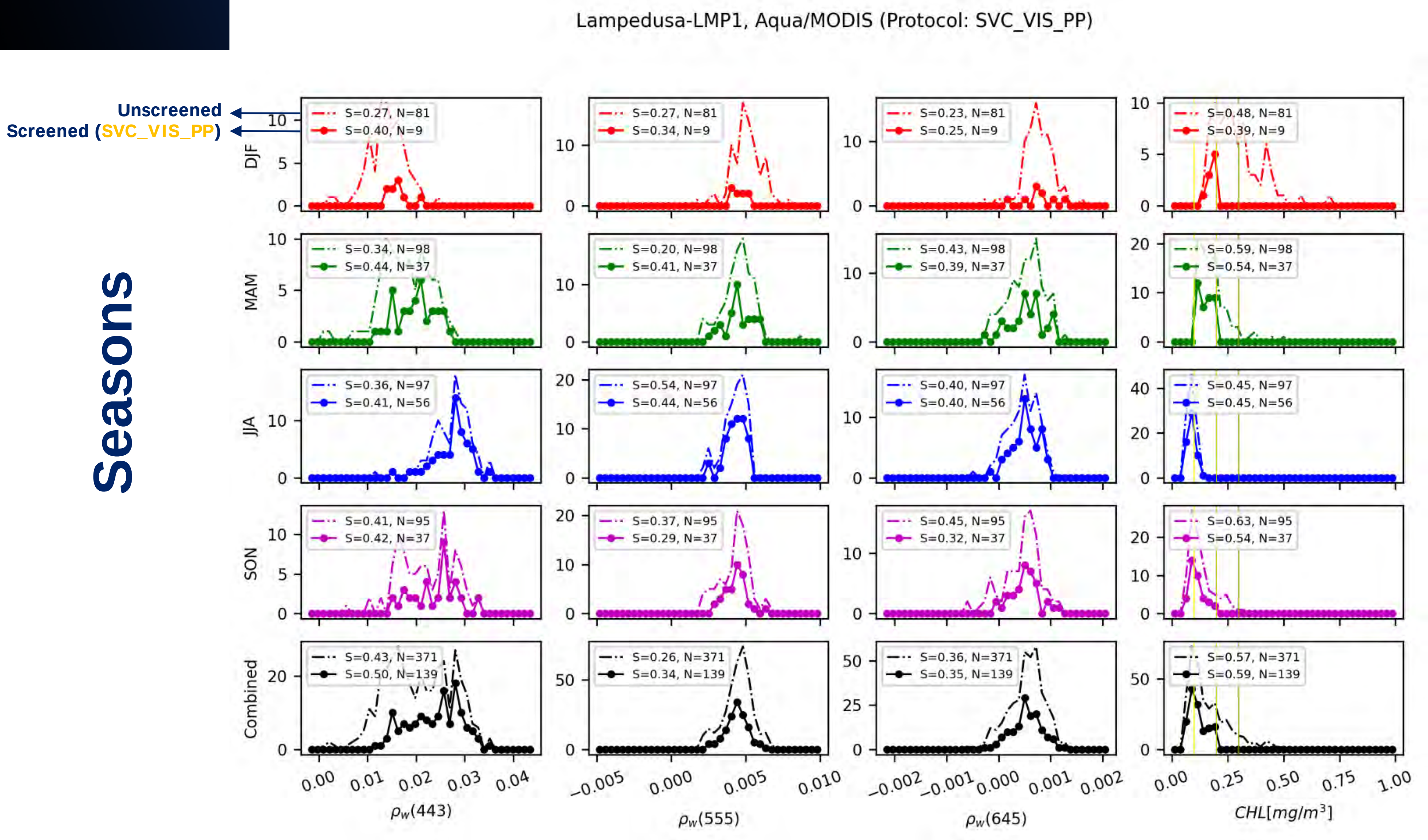


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

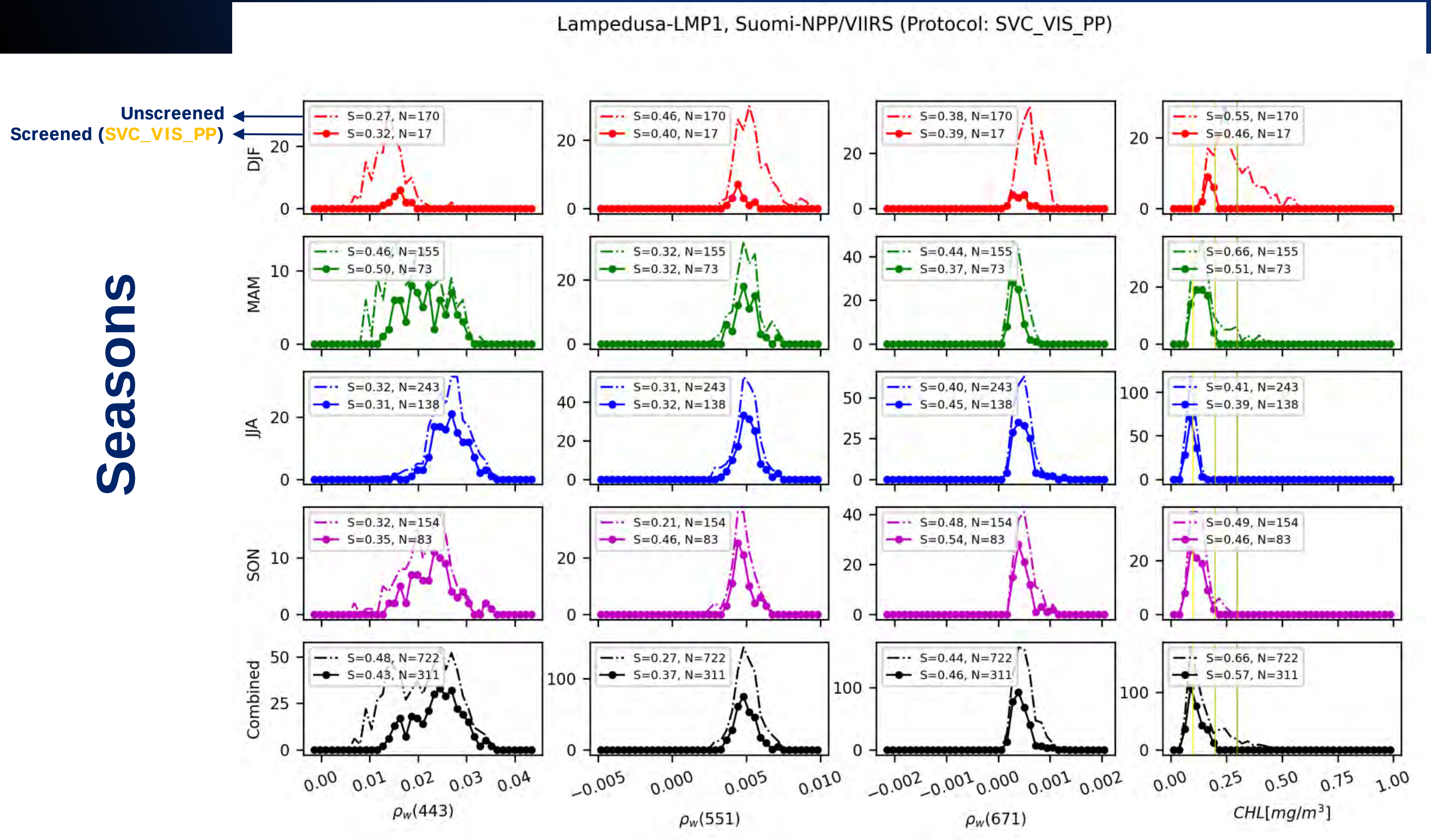


Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



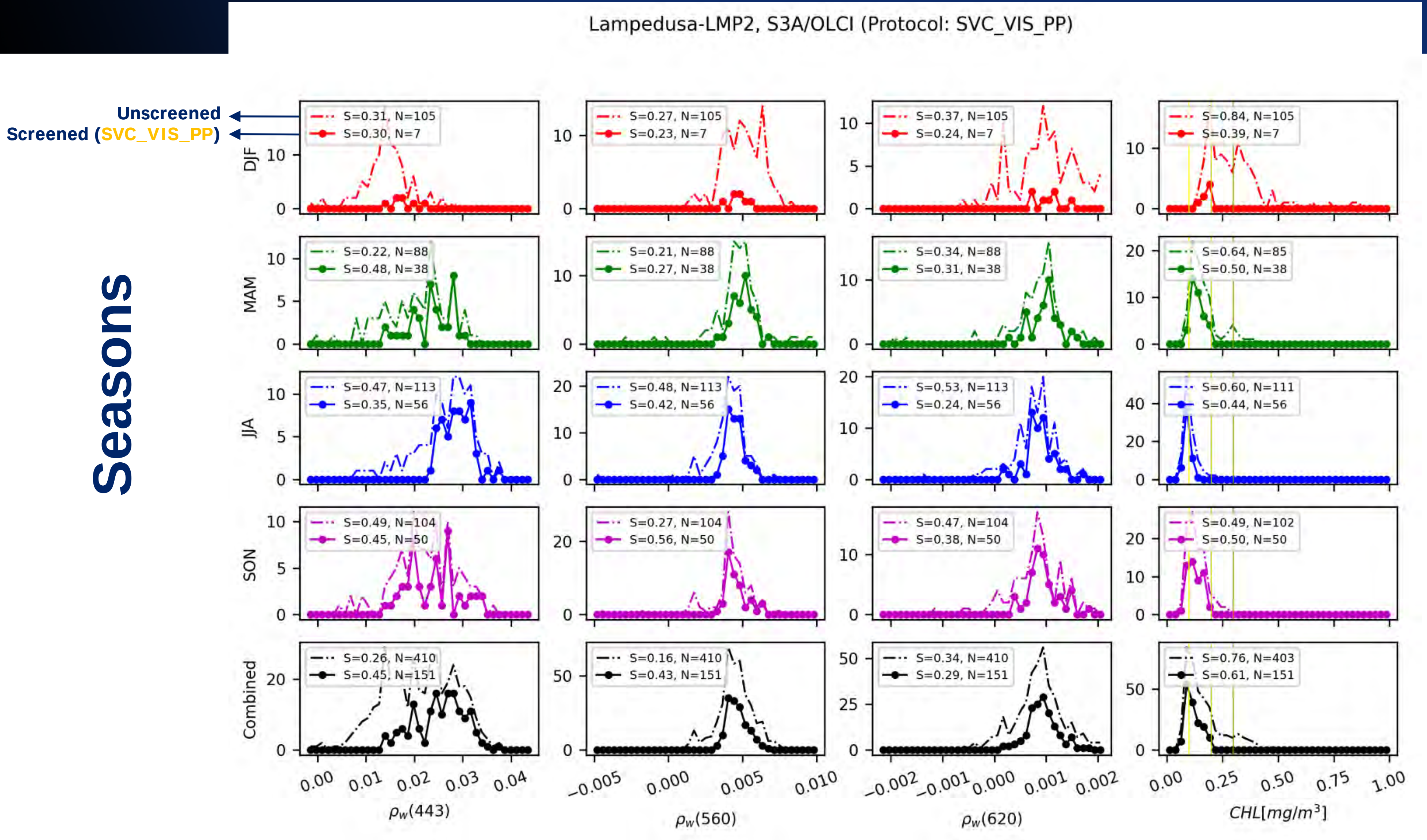
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



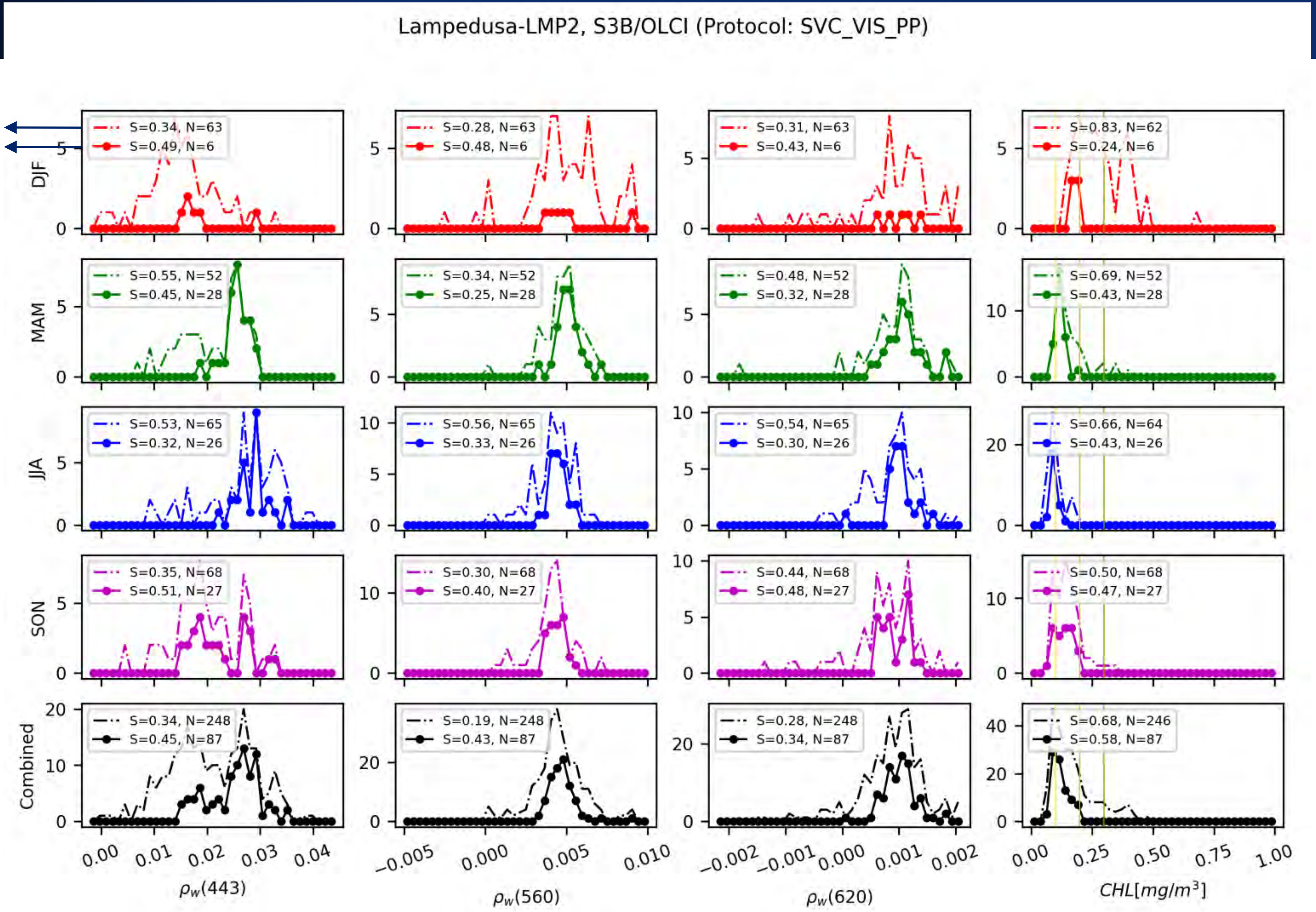
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened

Screened (SVC_VIS_PP)

Seasons

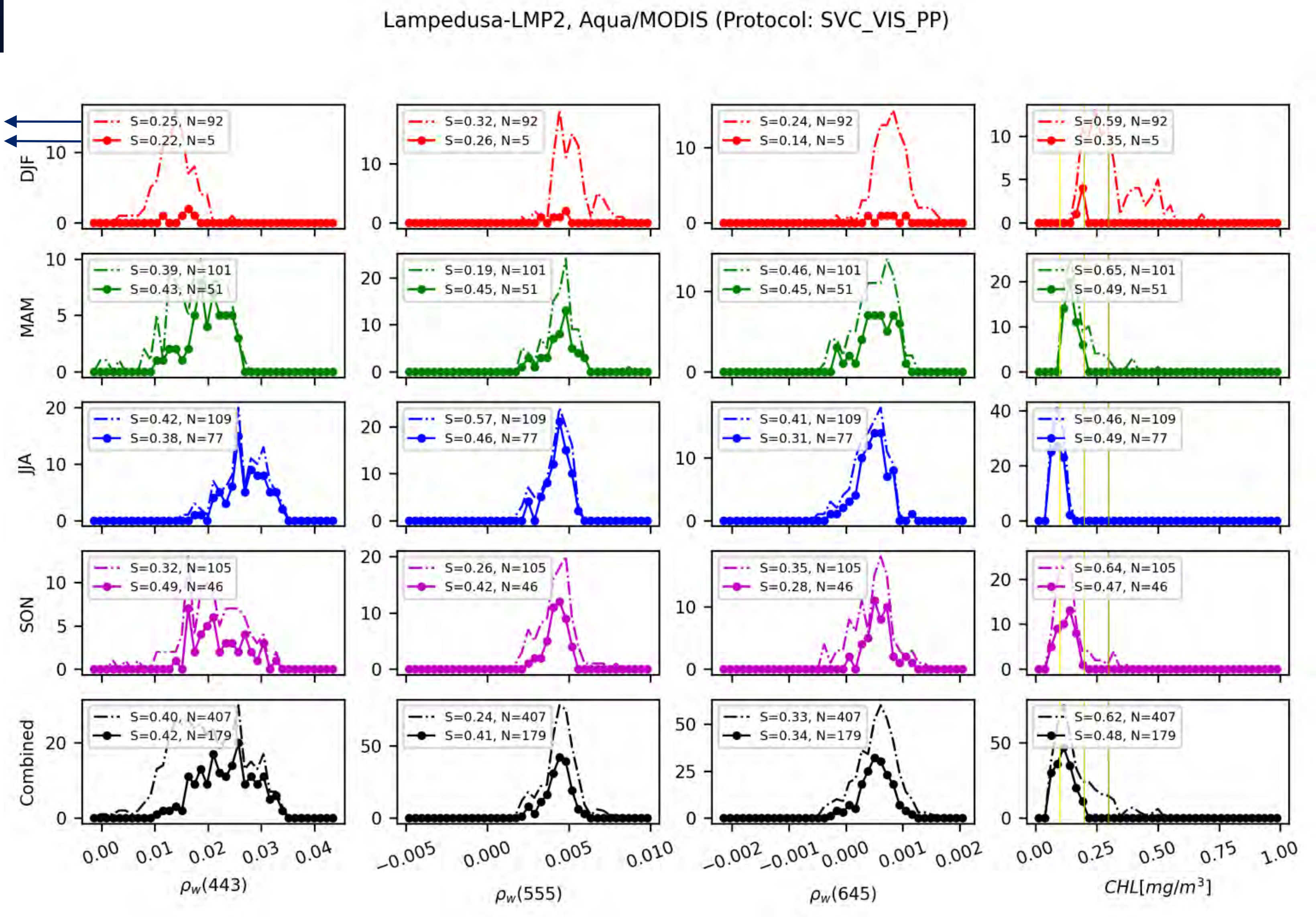


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

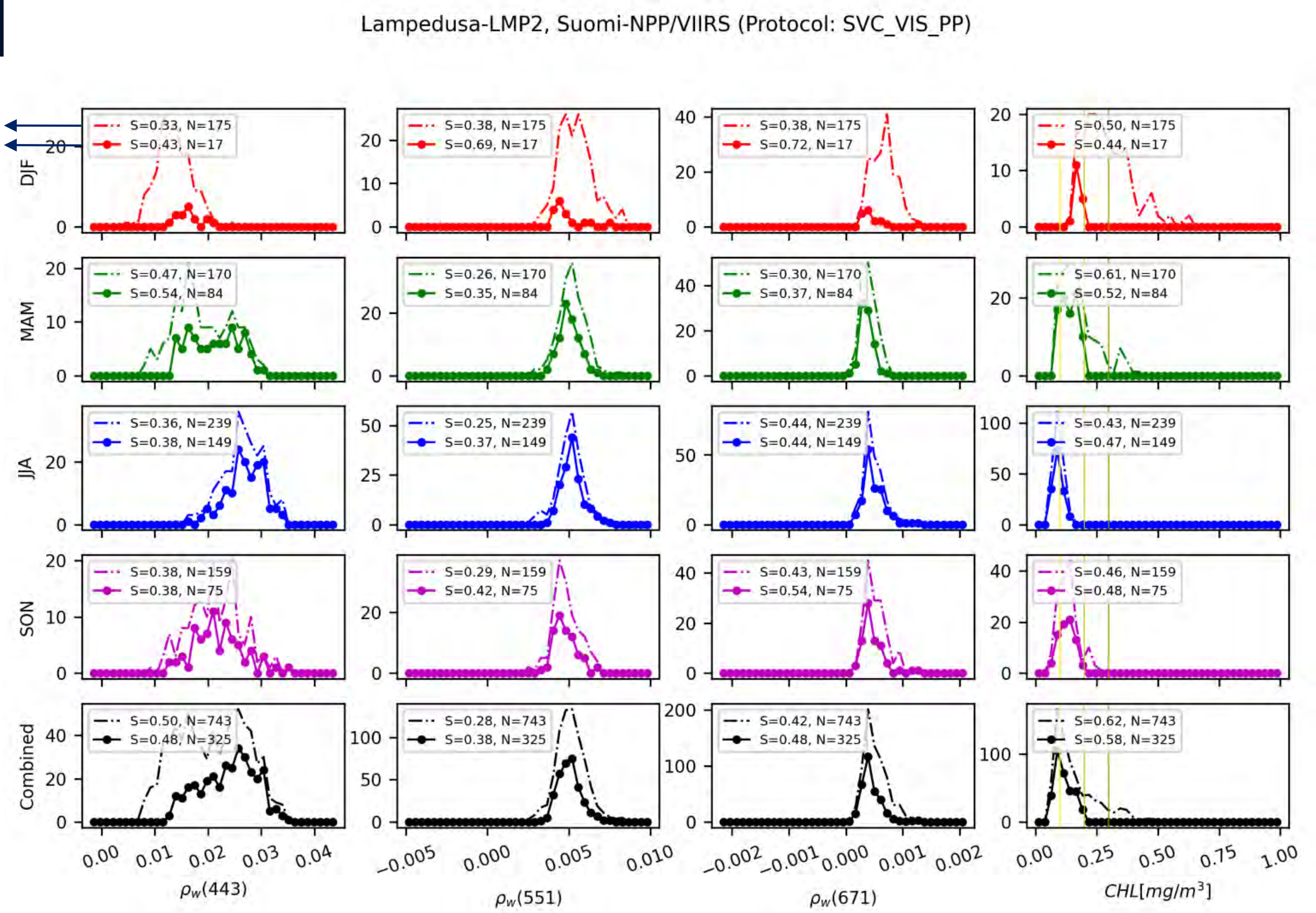


EUMETSAT

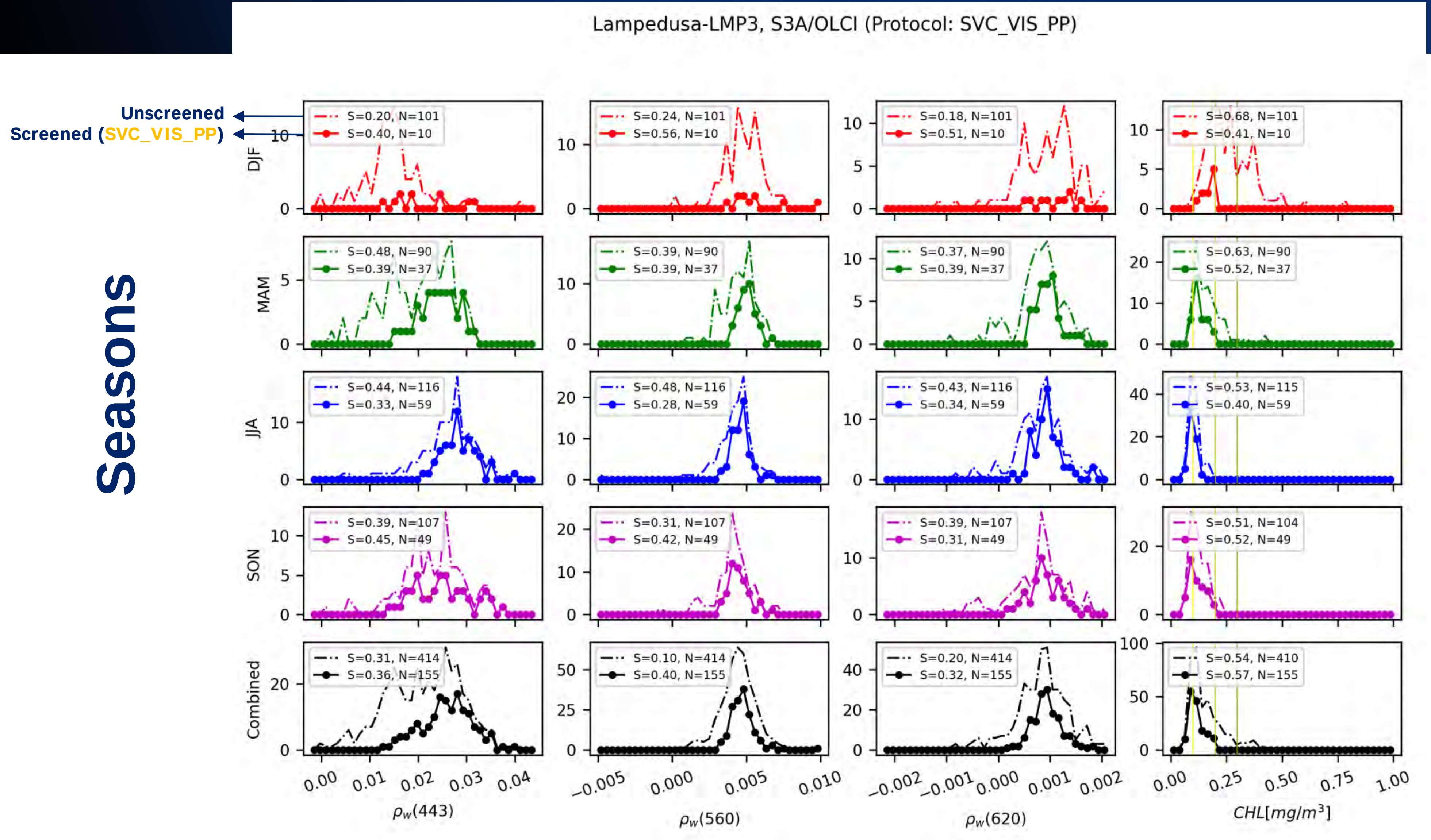
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

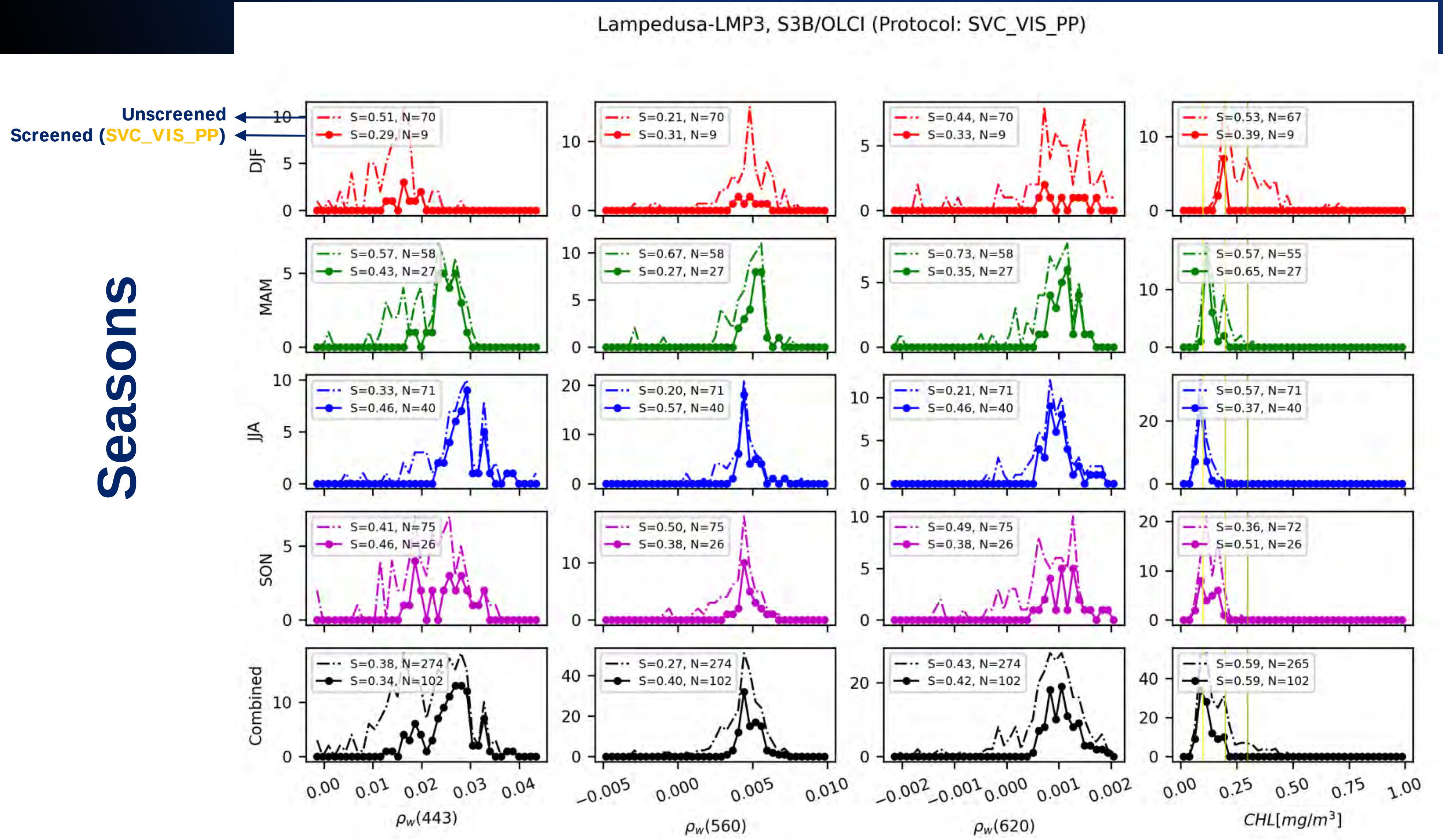


Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

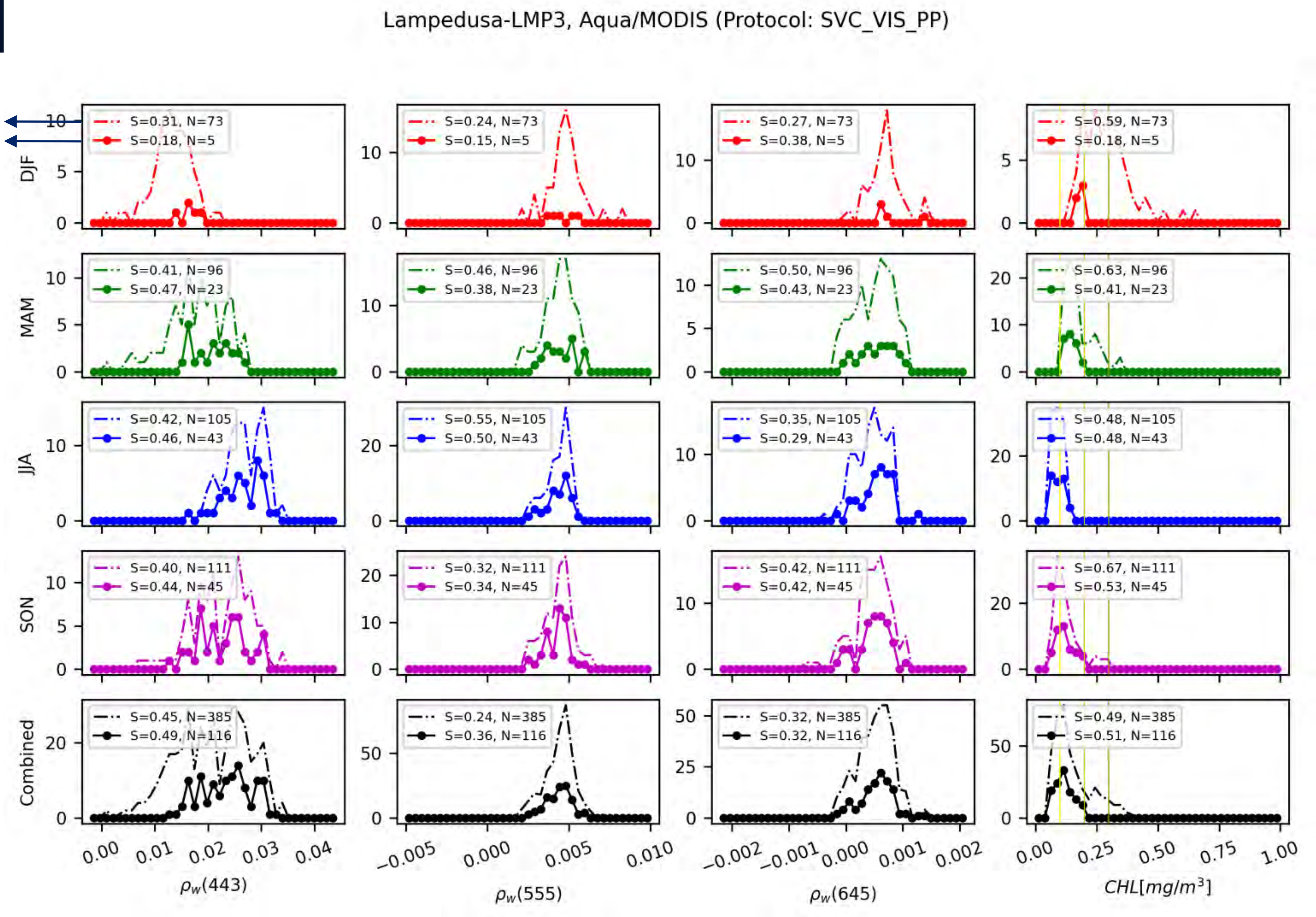


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

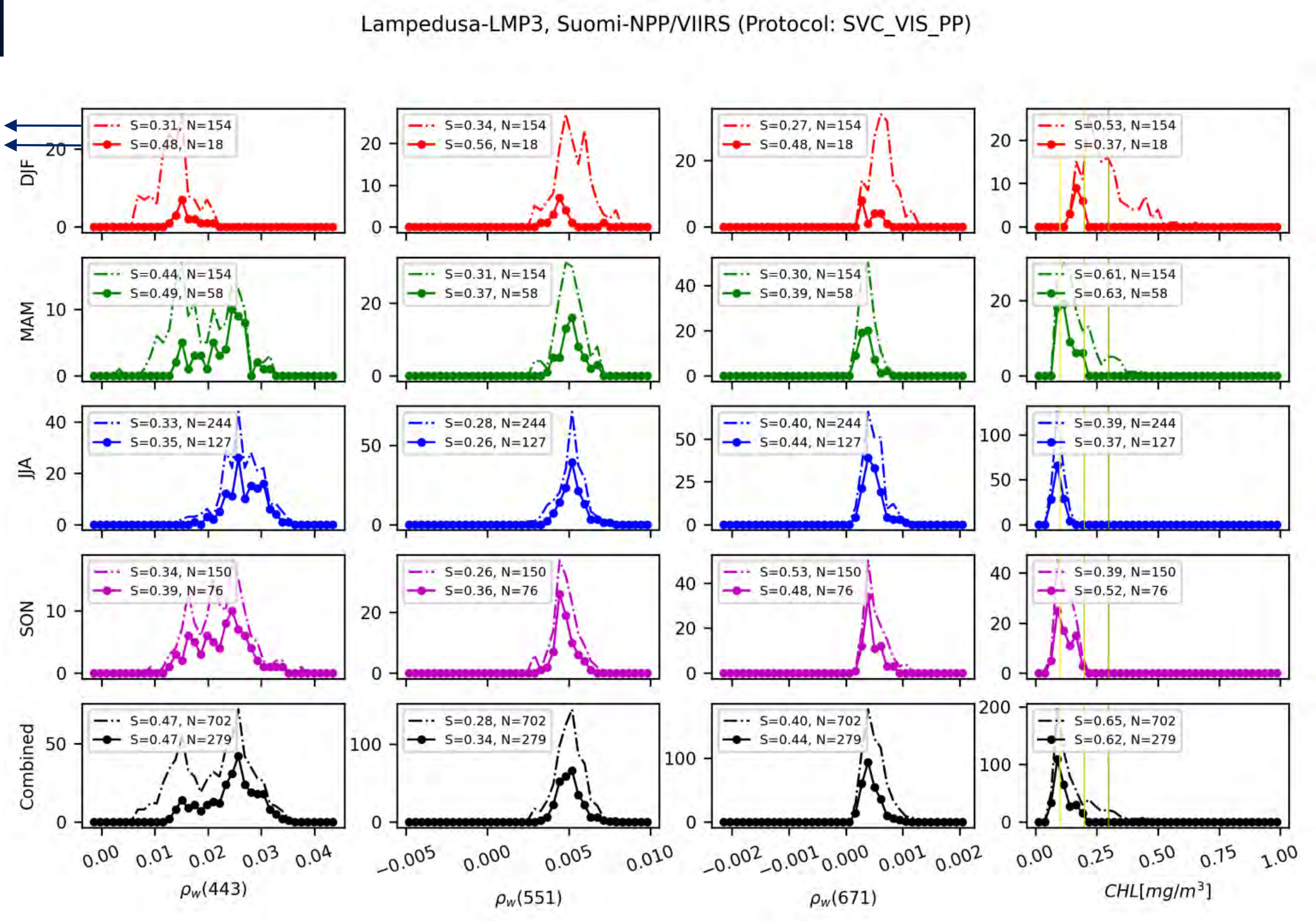


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons



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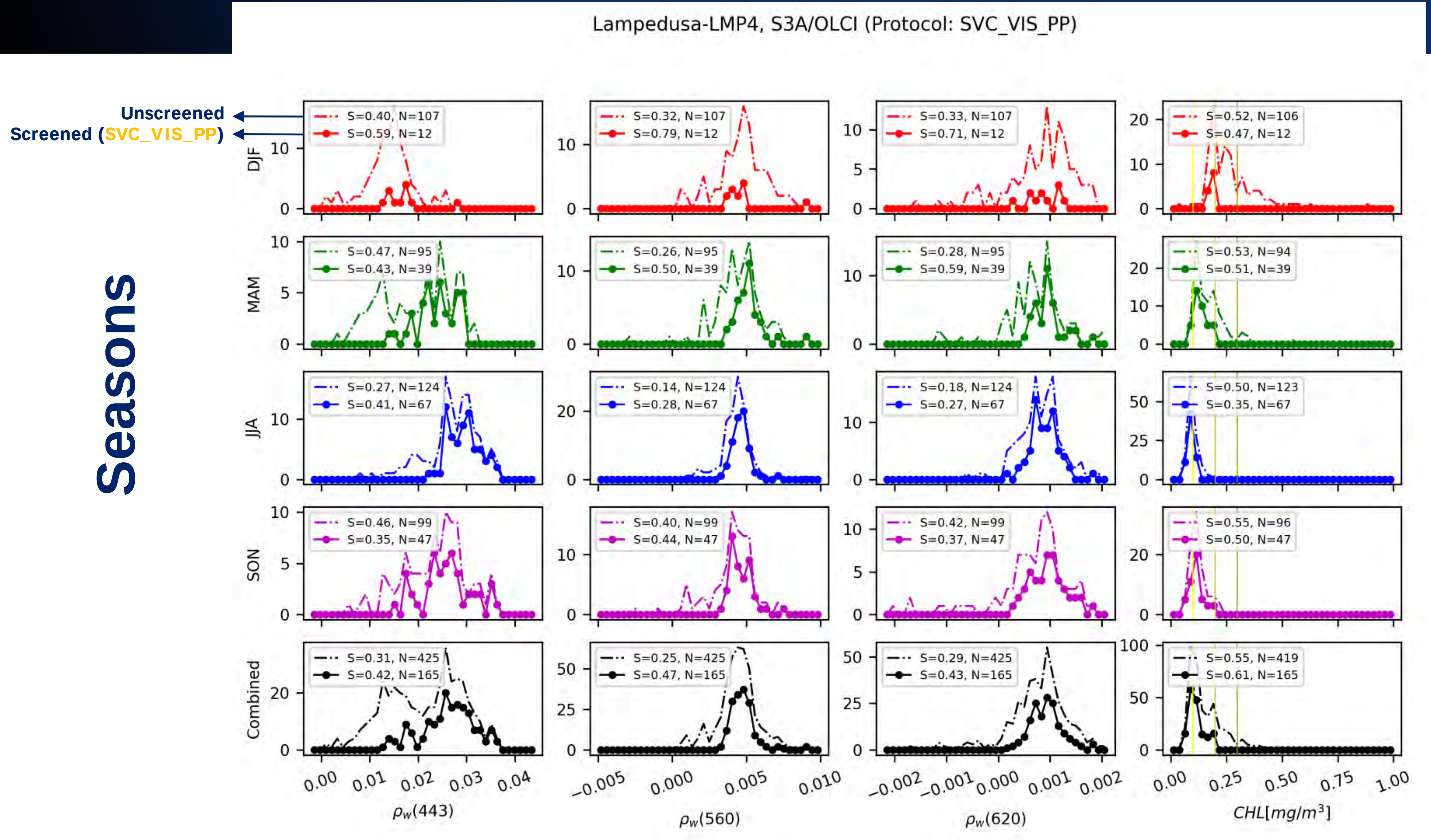
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

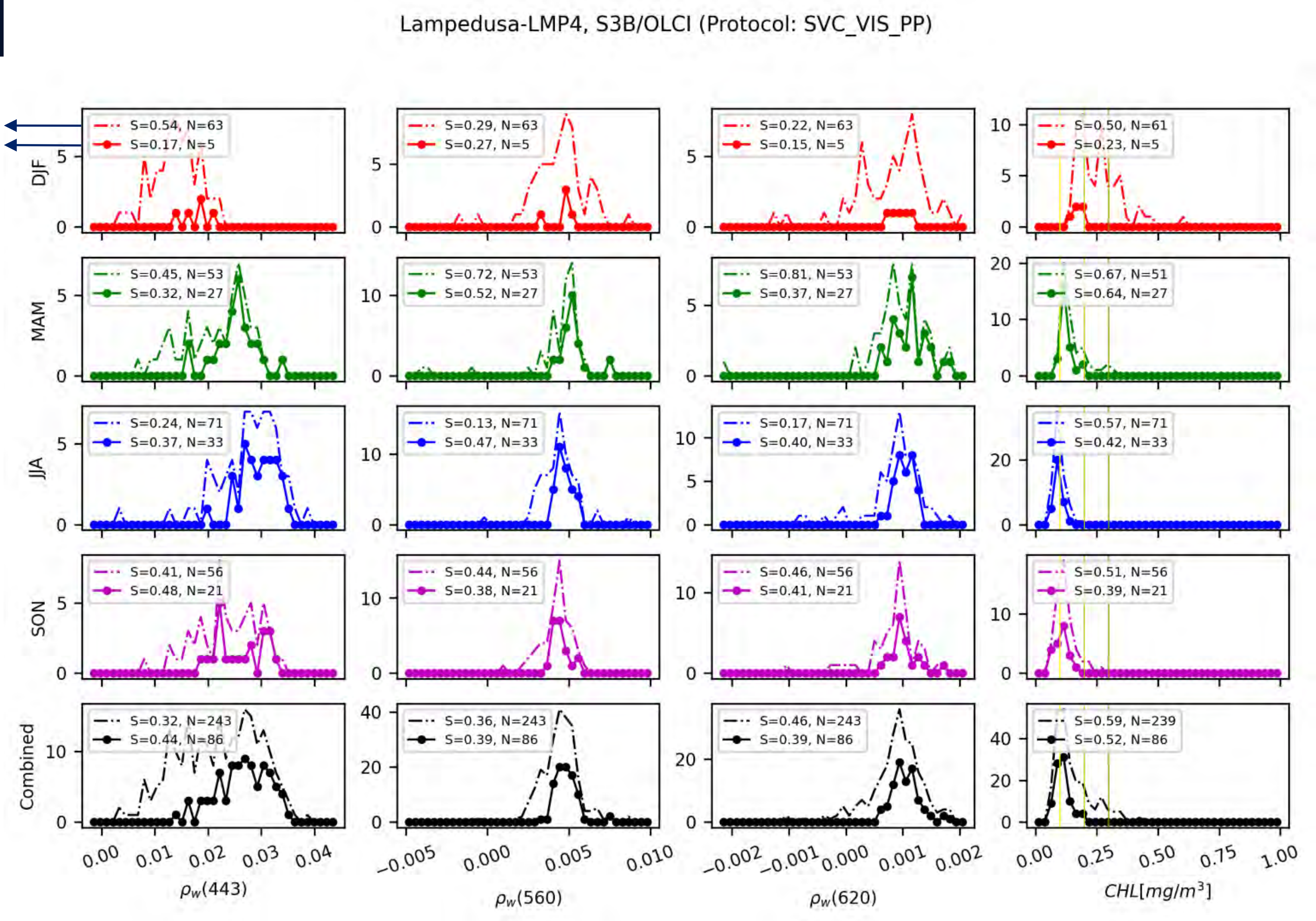


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

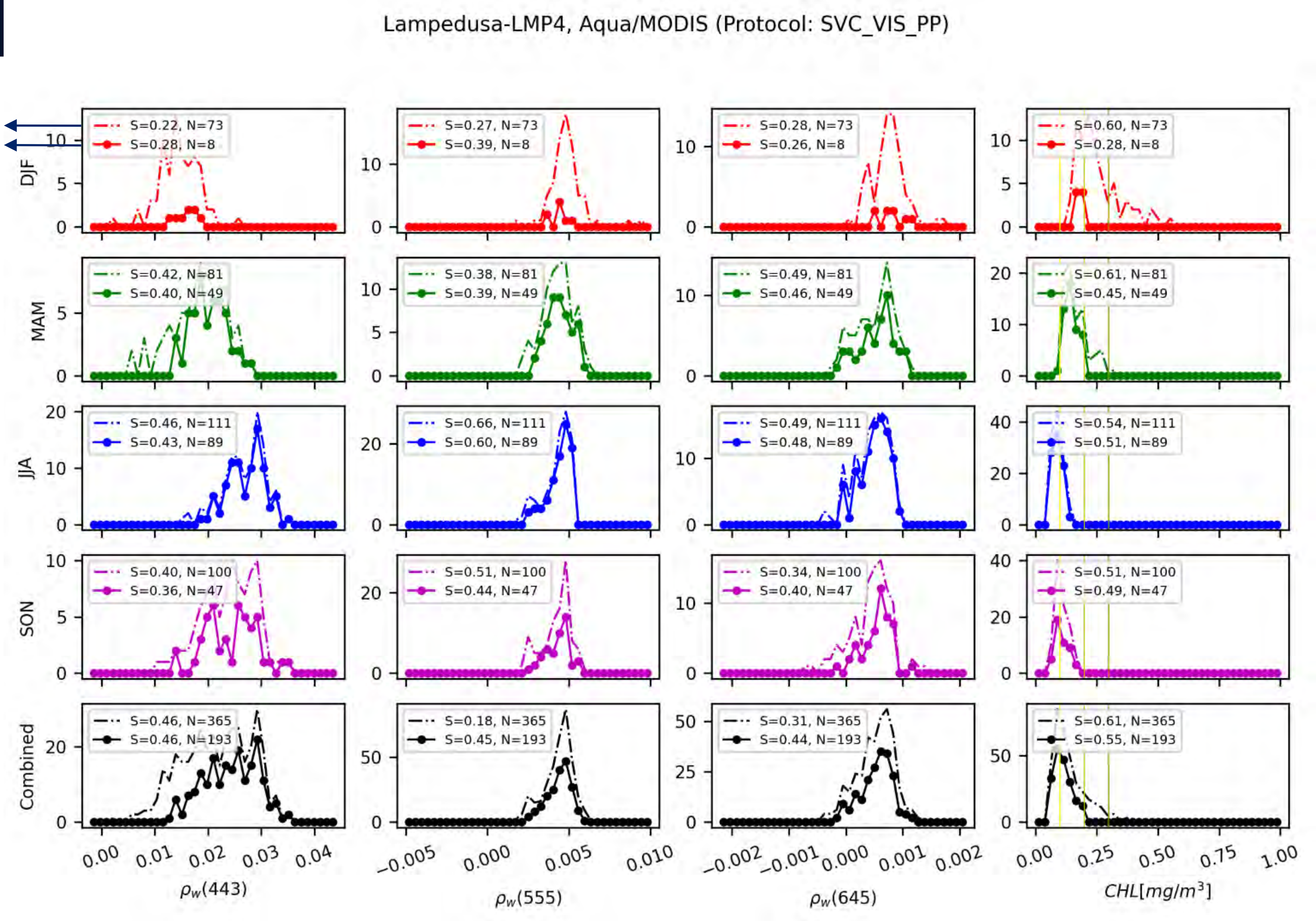


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

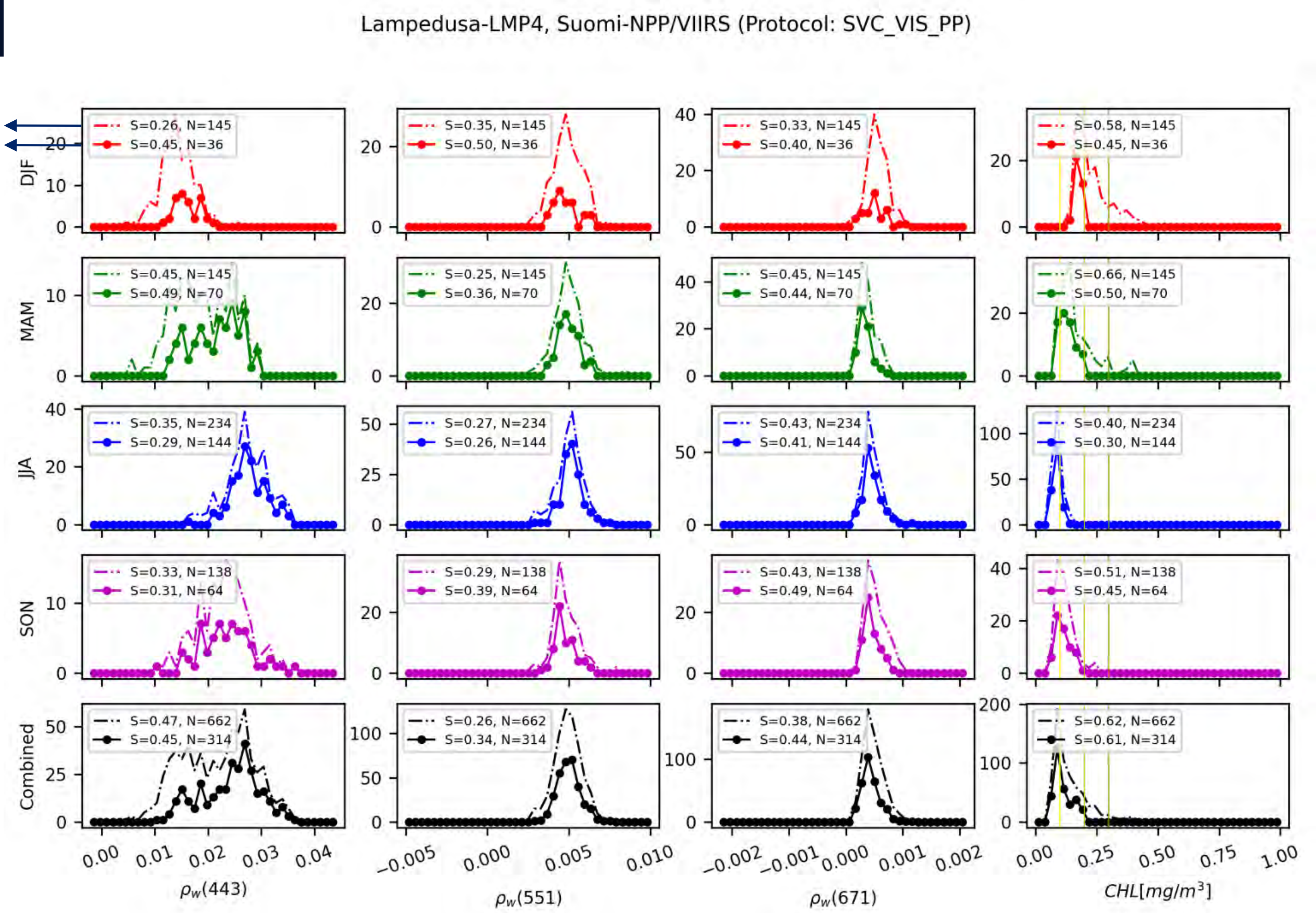


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

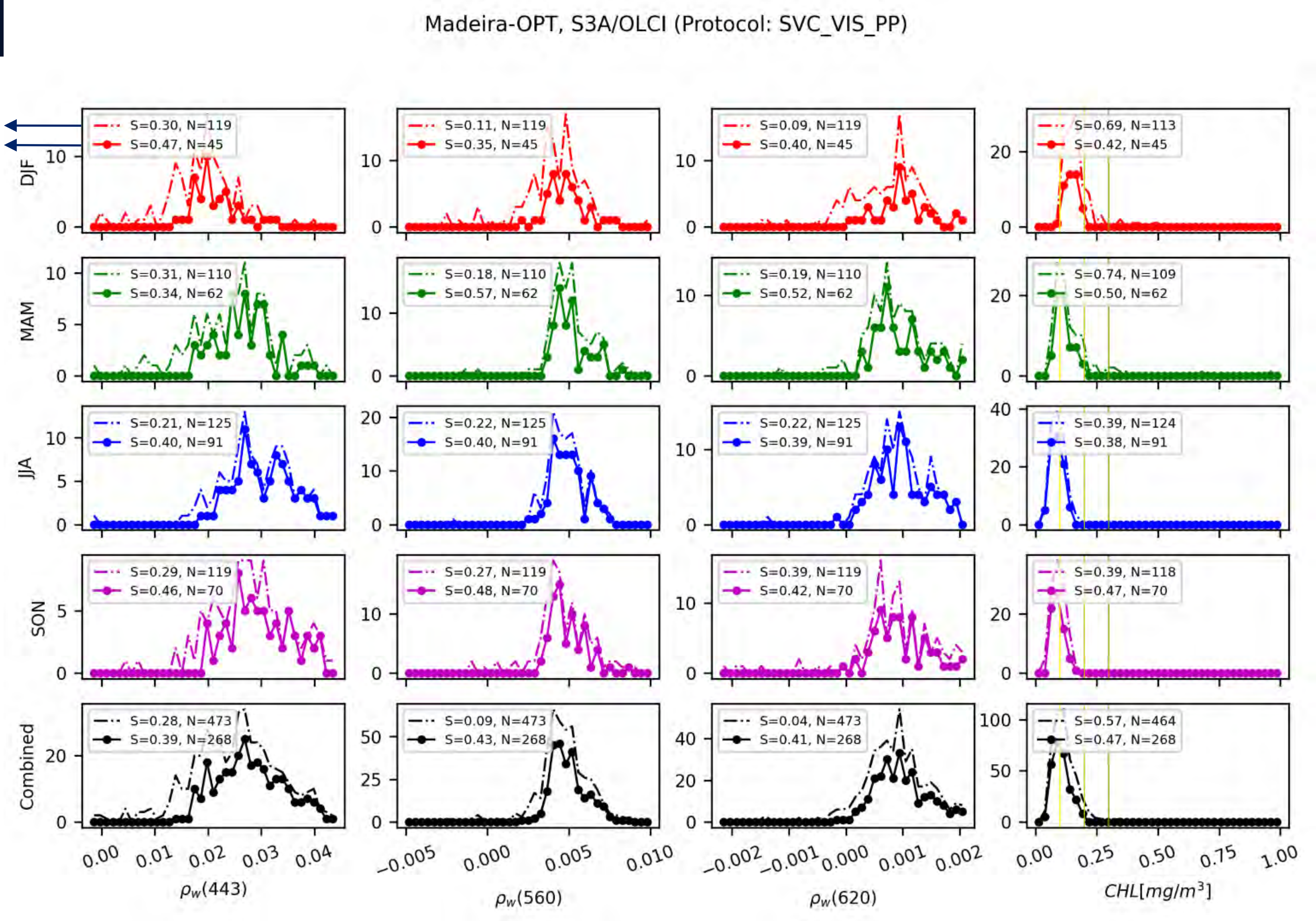


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

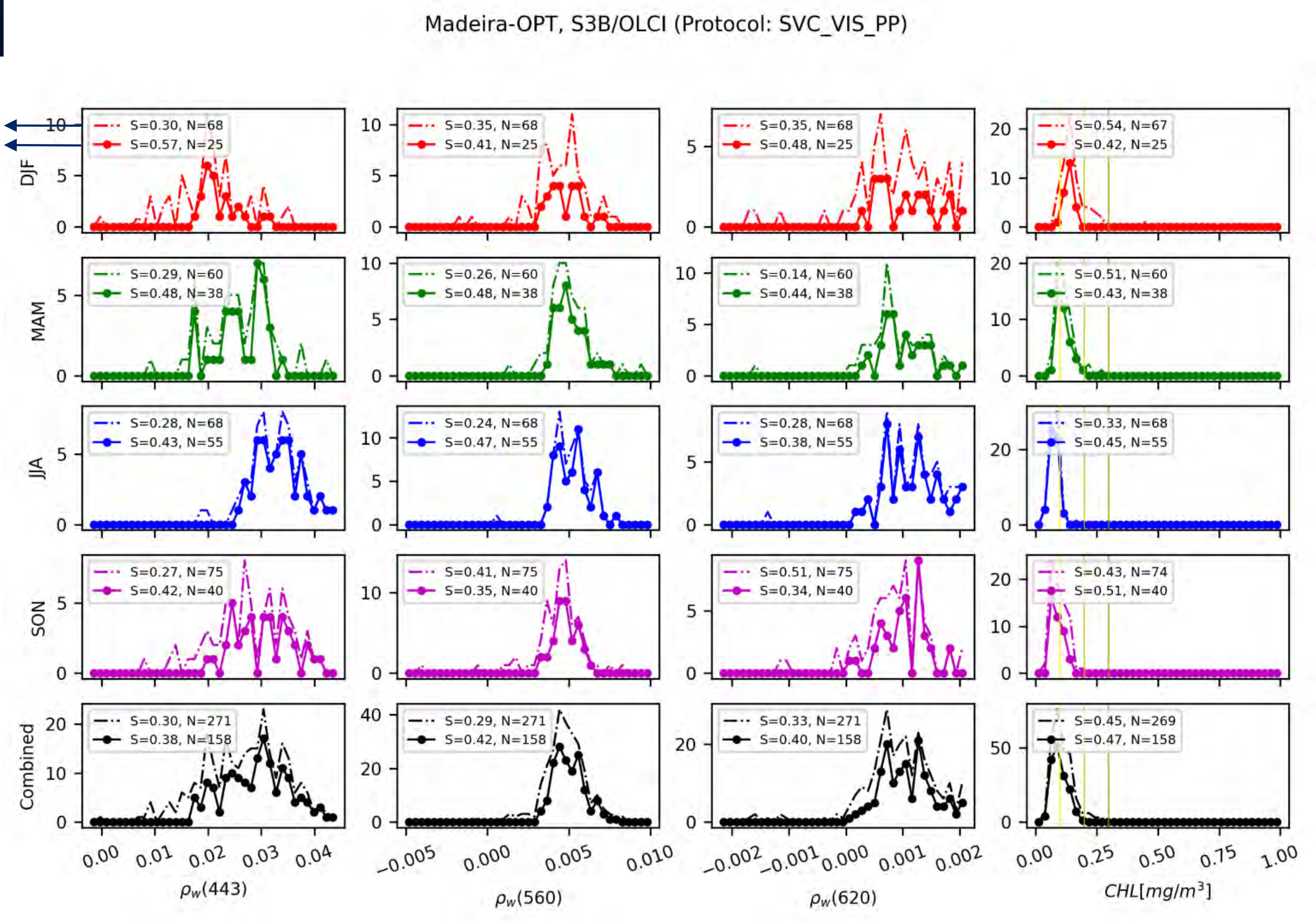


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons



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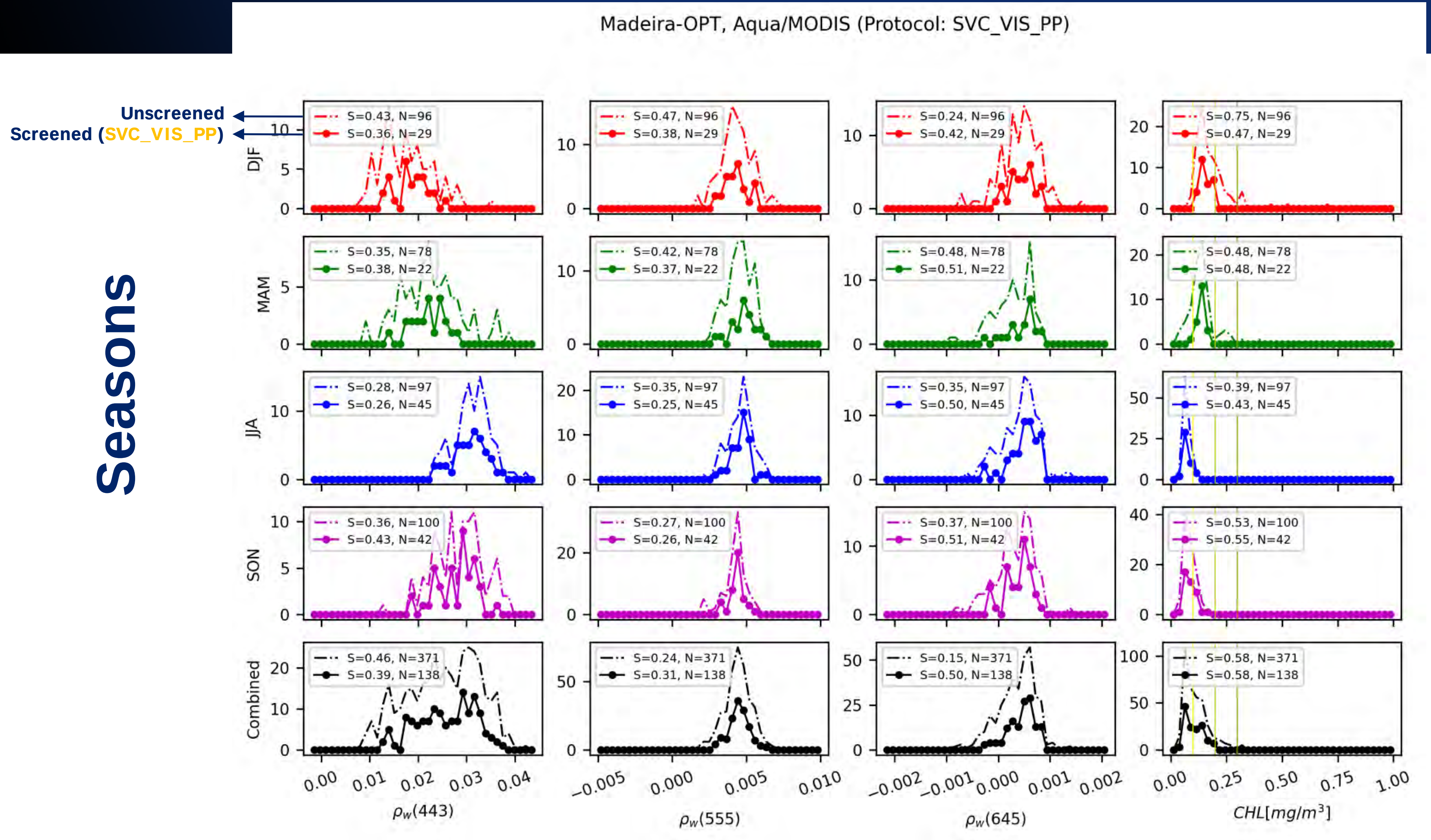
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

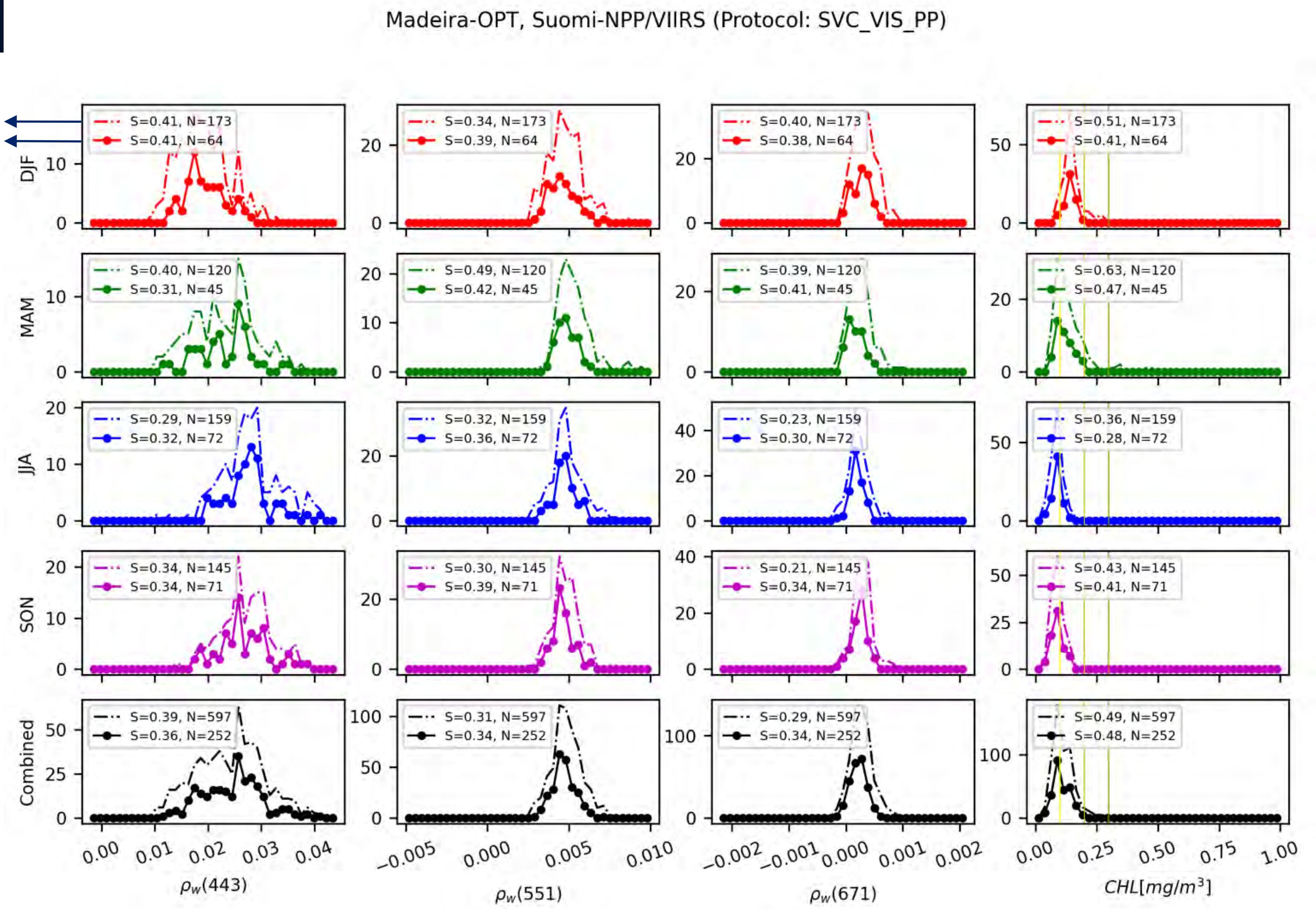


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons

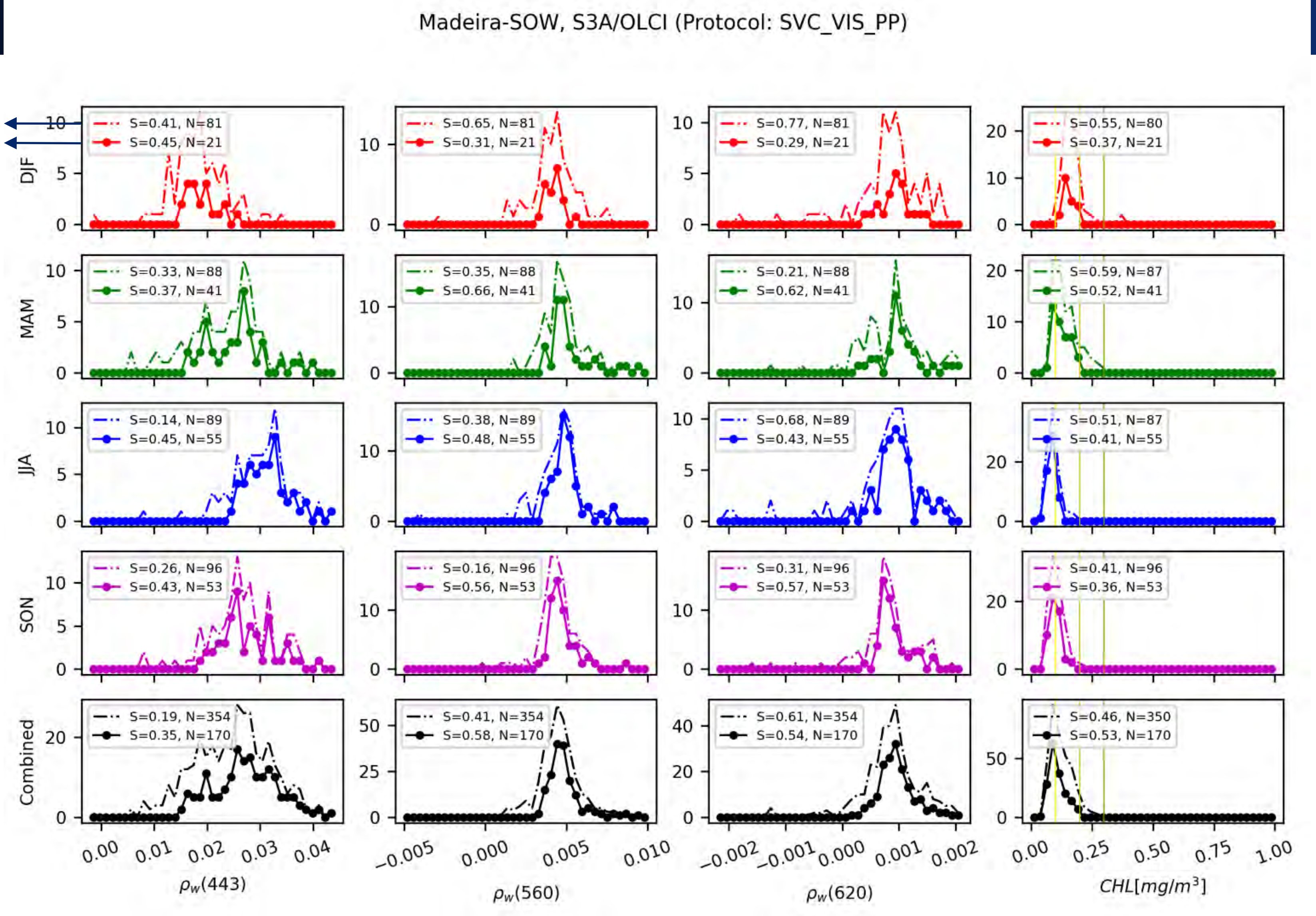


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened
Screened (SVC_VIS_PP)

Seasons



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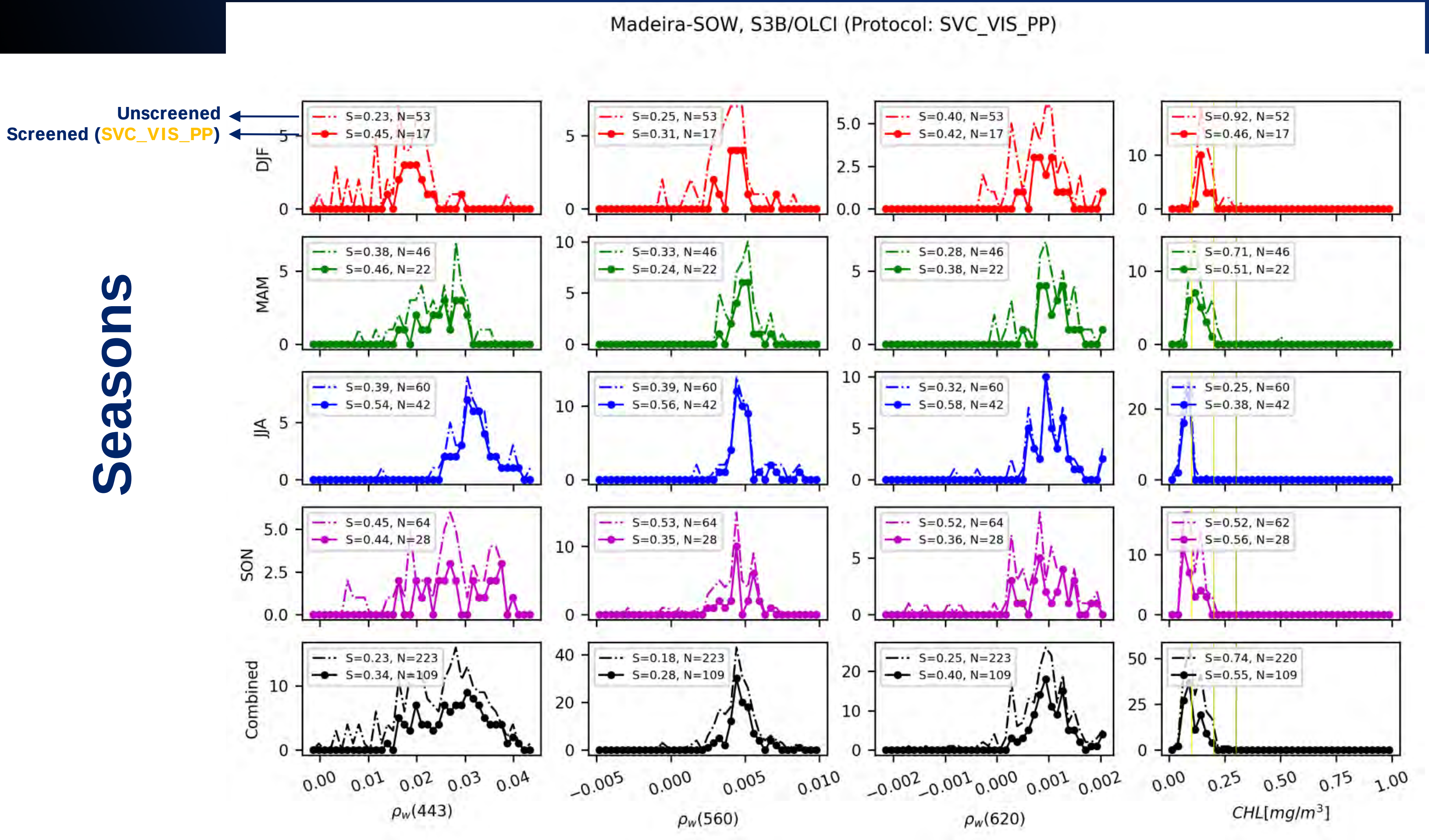
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



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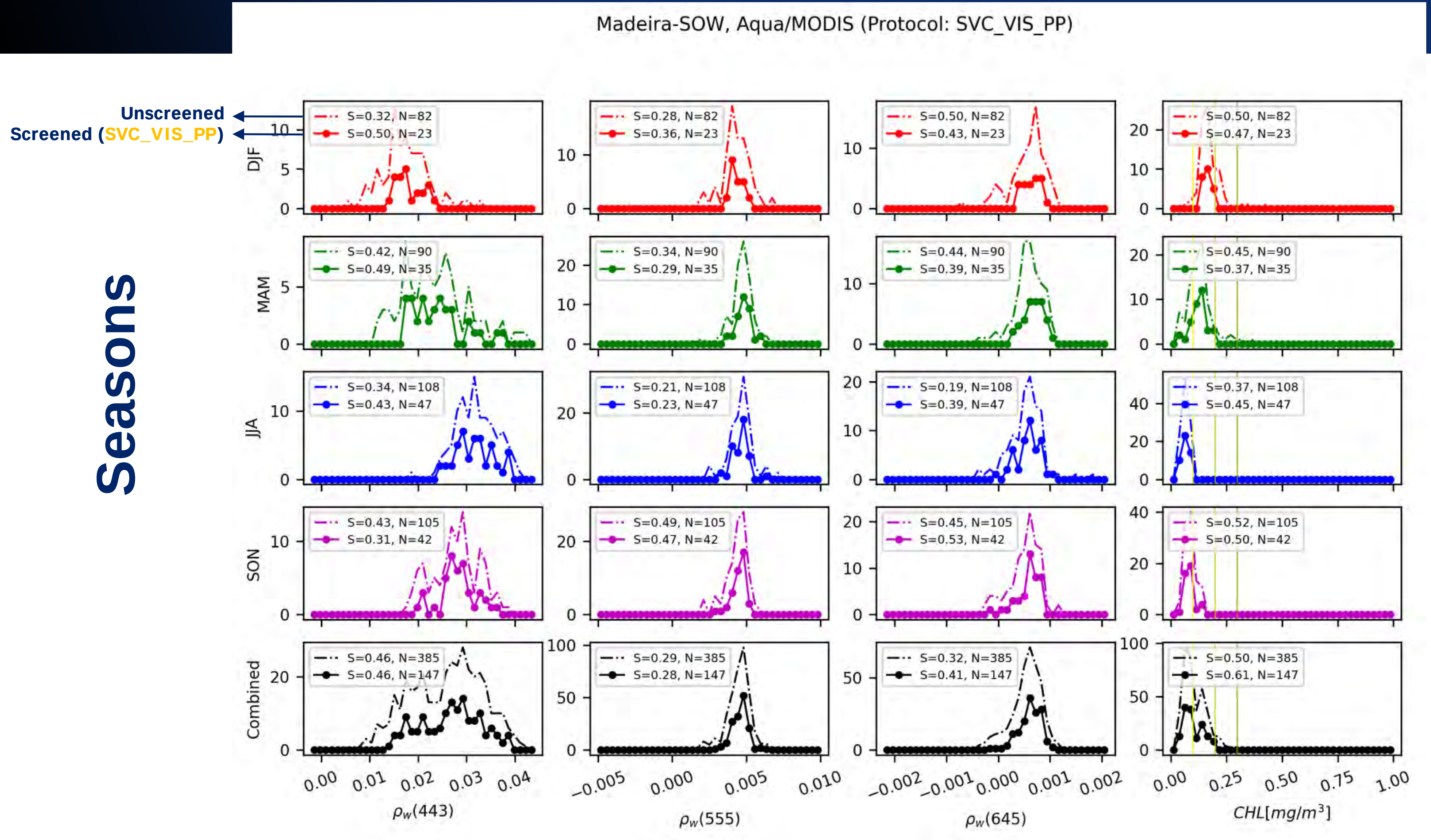
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



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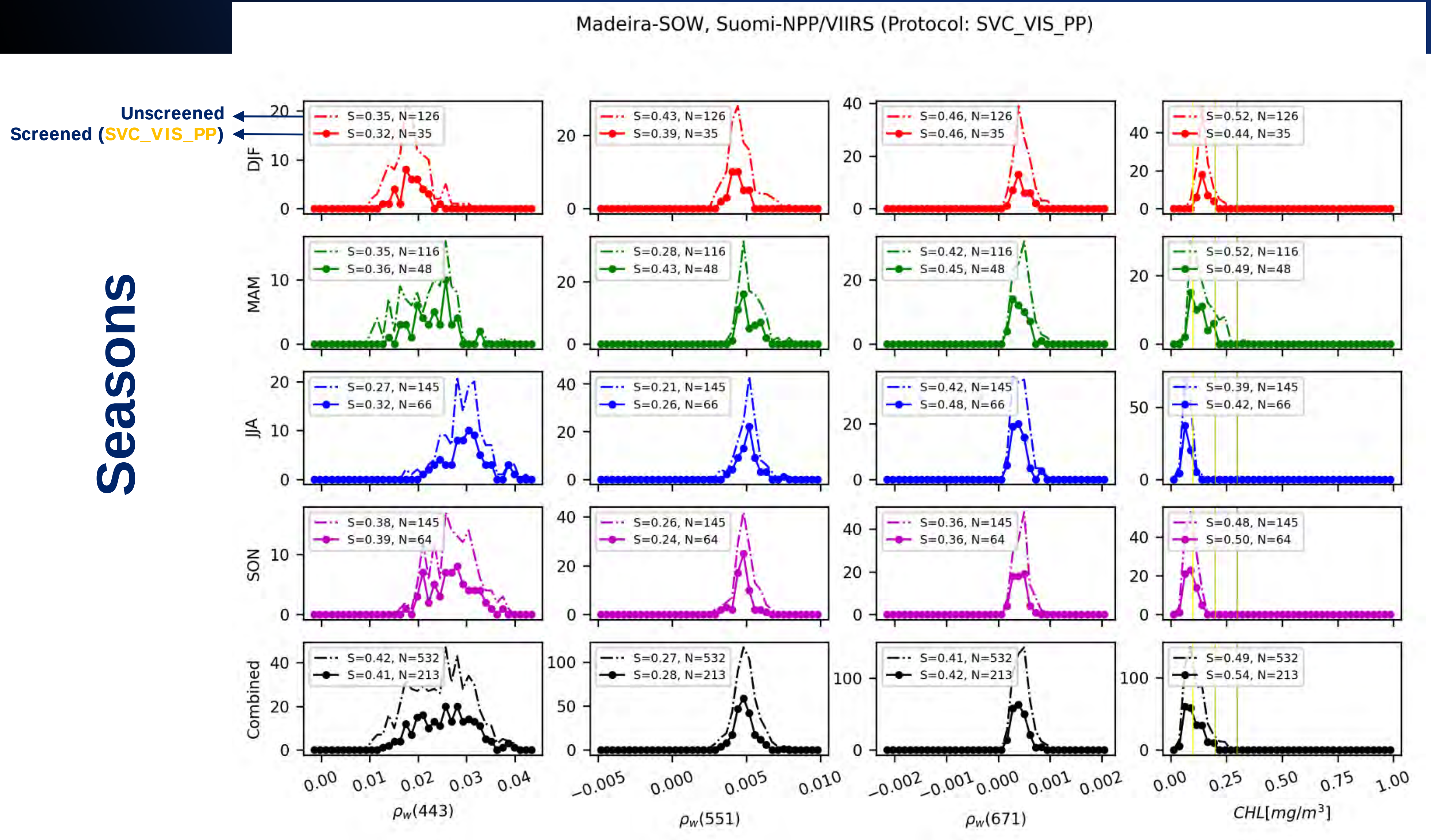
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



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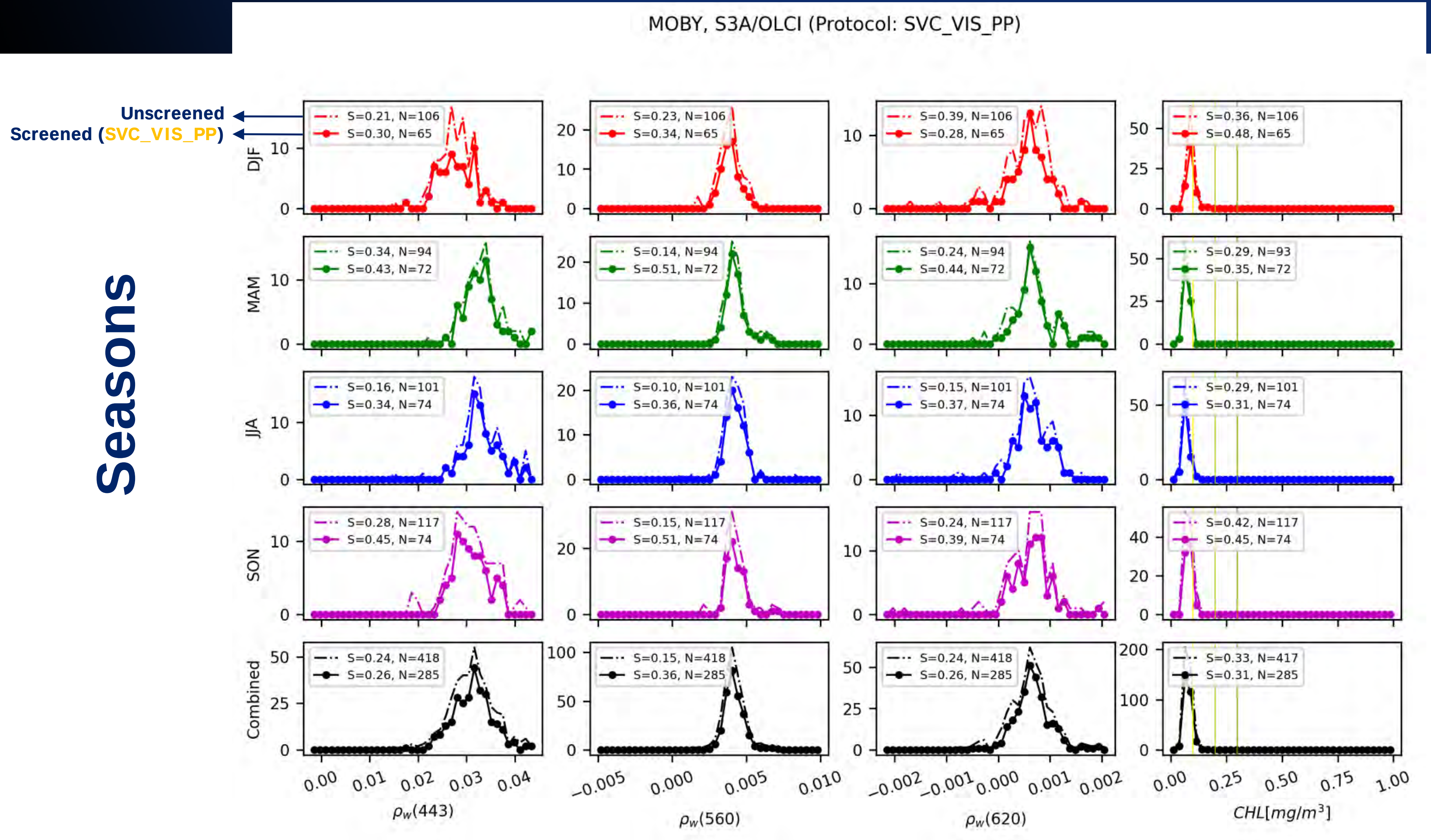
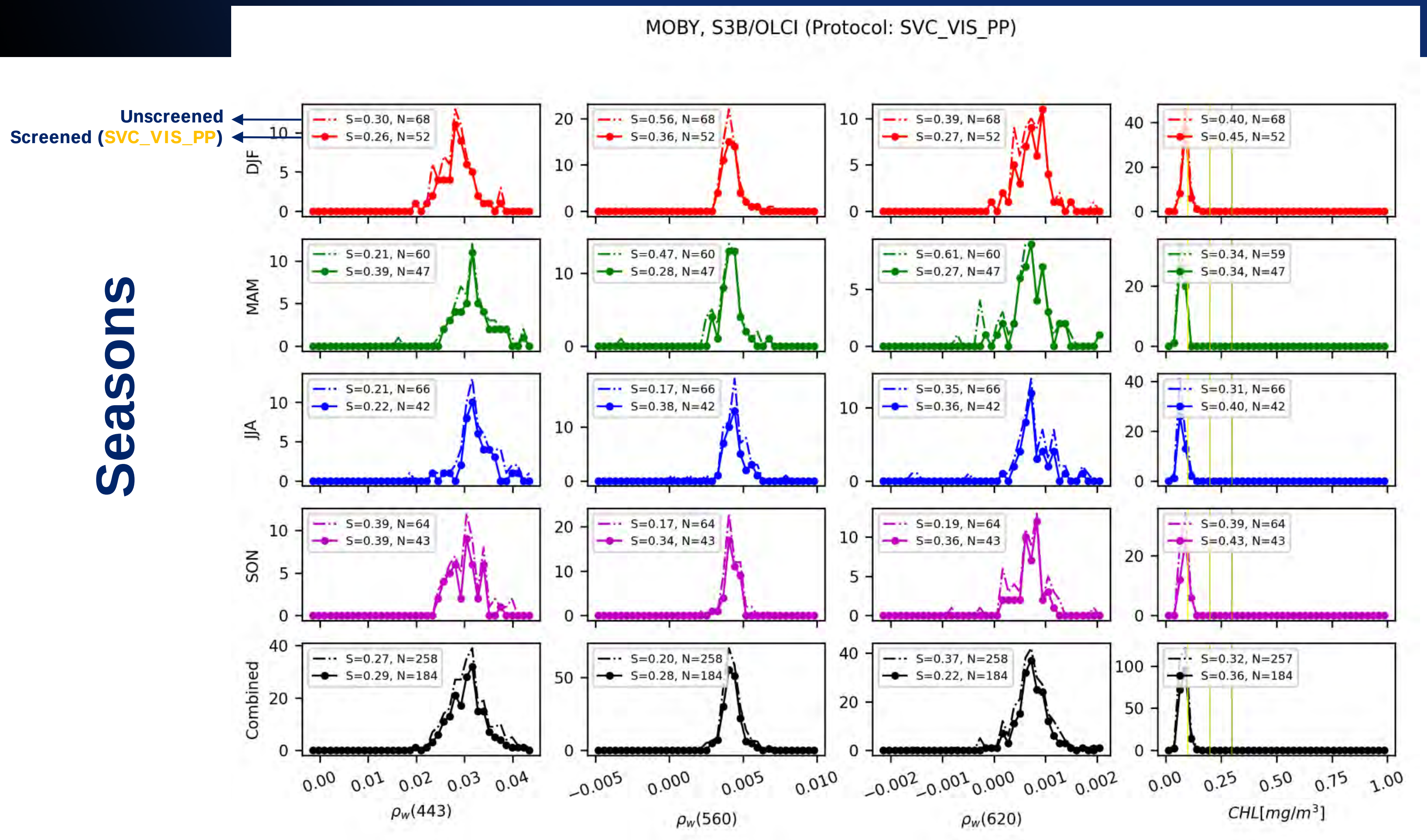
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



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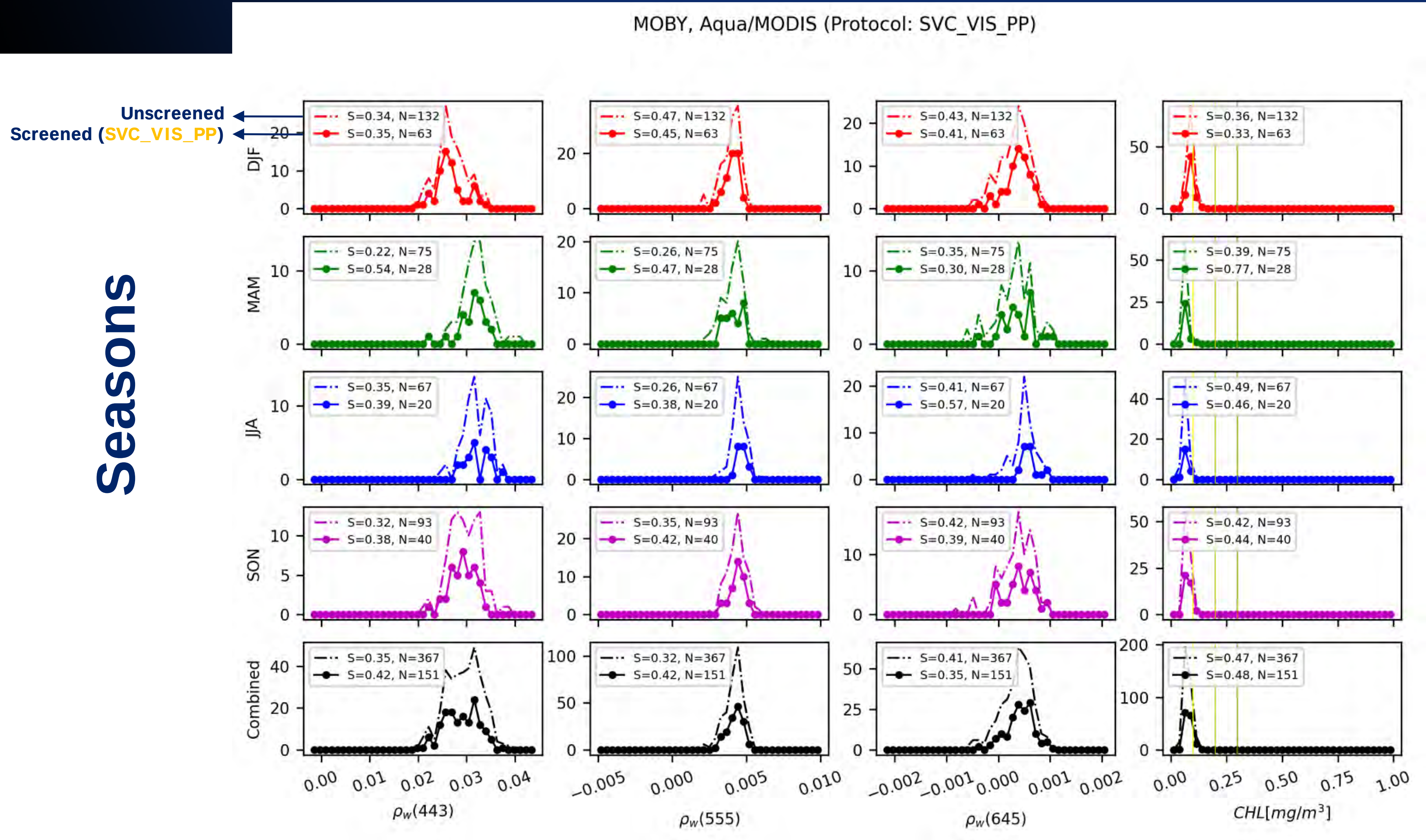
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



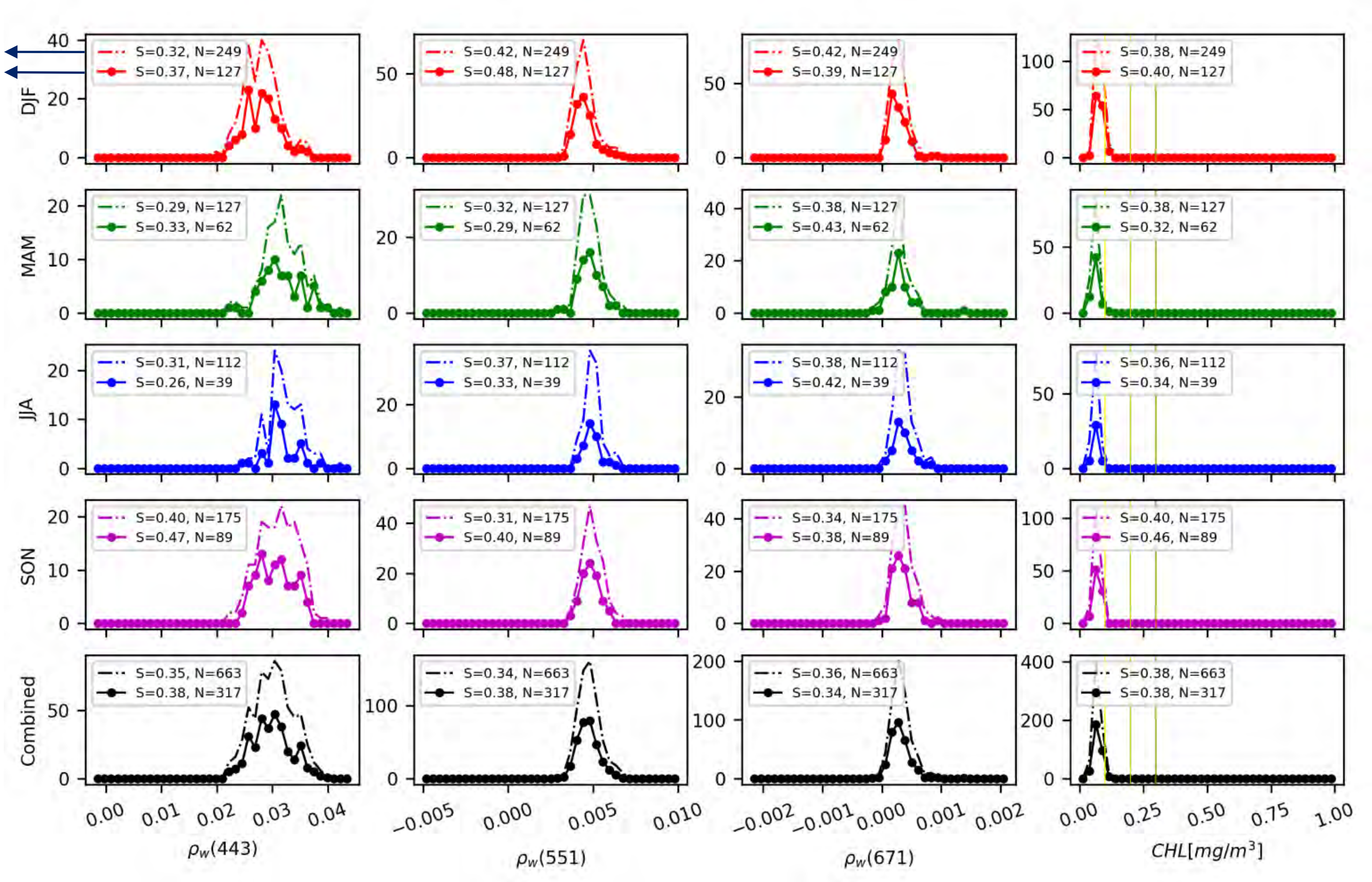
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

MOBY, Suomi-NPP/VIIRS (Protocol: SVC_VIS_PP)

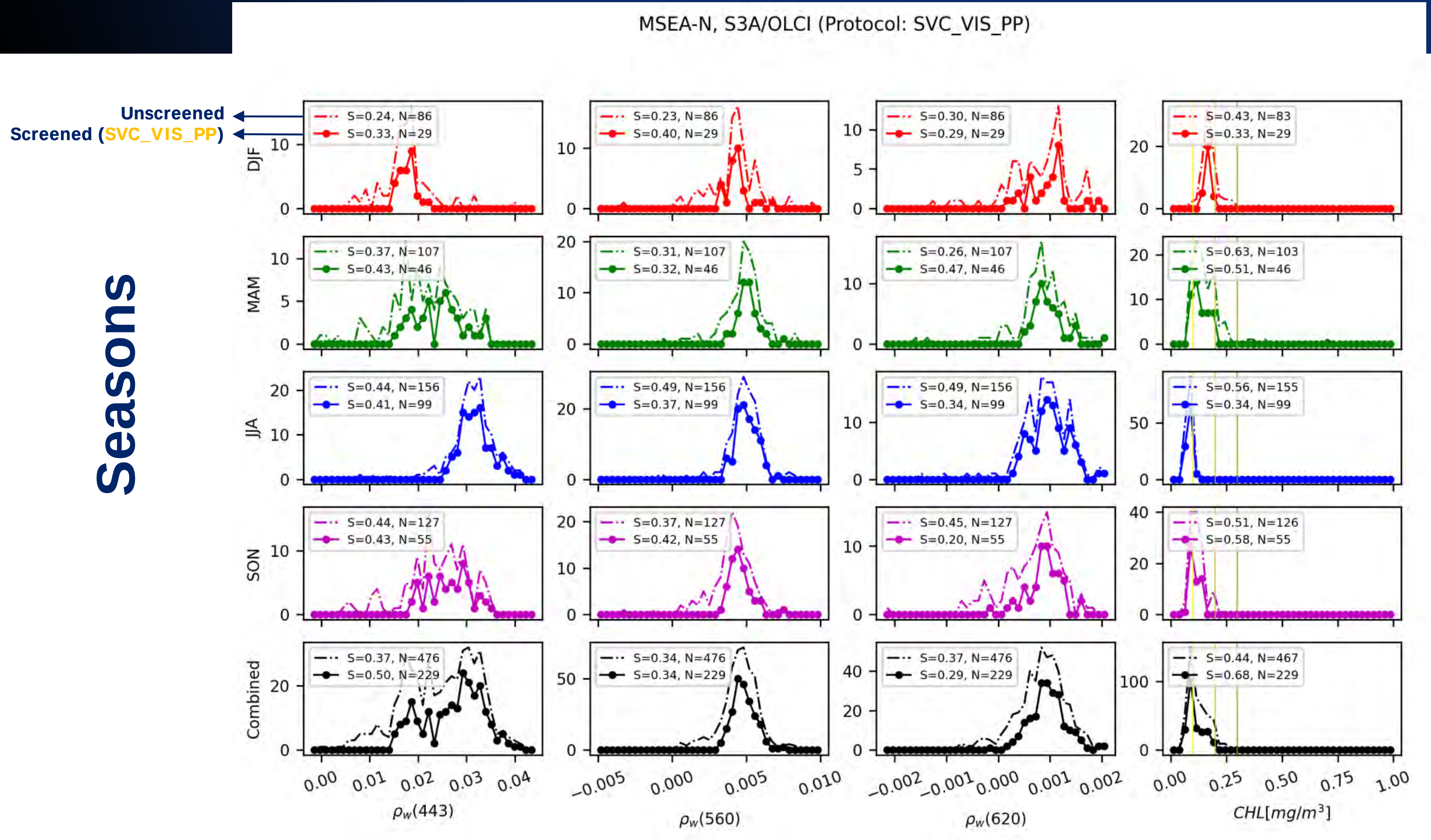
Unscreened
Screened (SVC_VIS_PP)

Seasons



EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



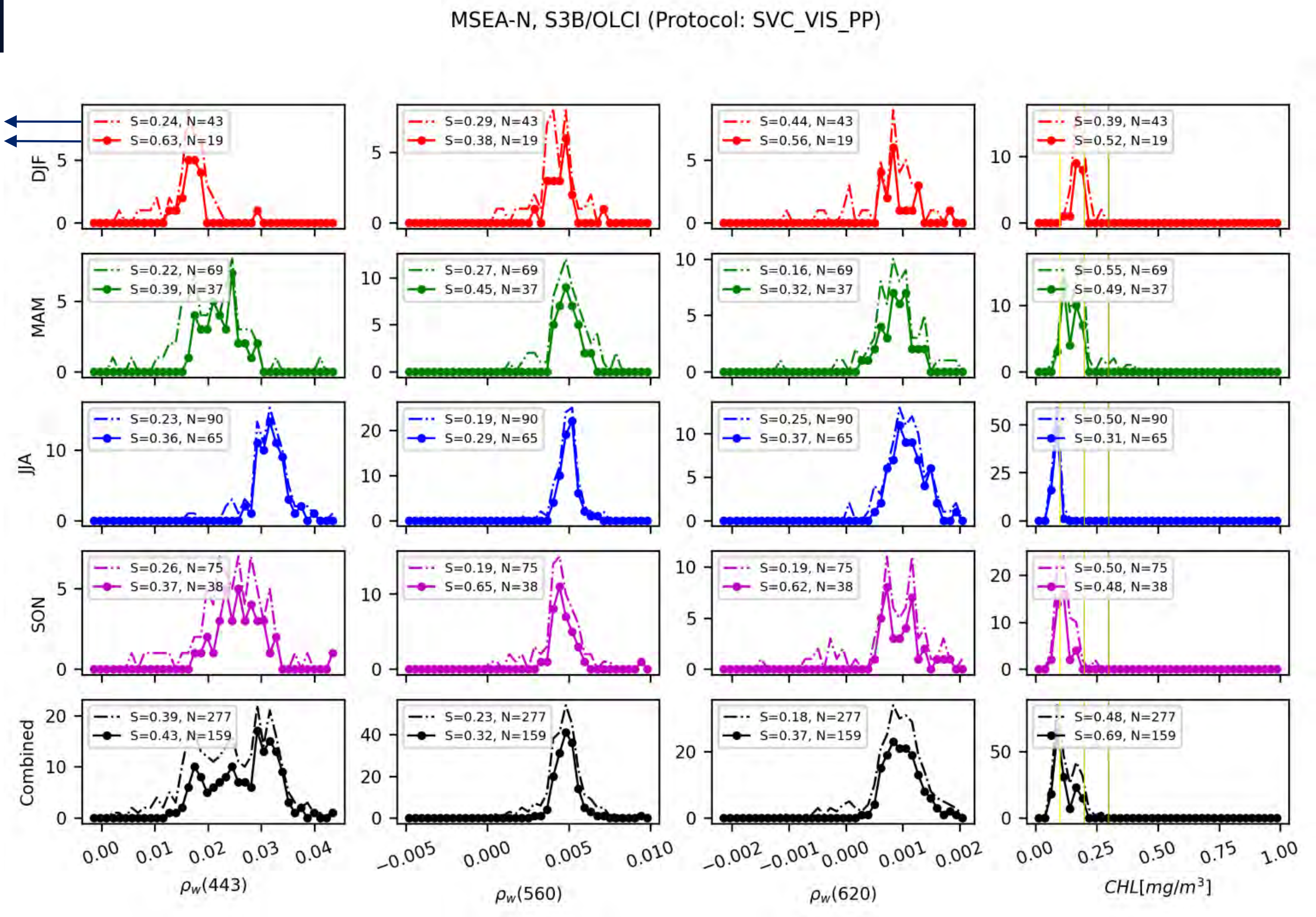
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

Unscreened

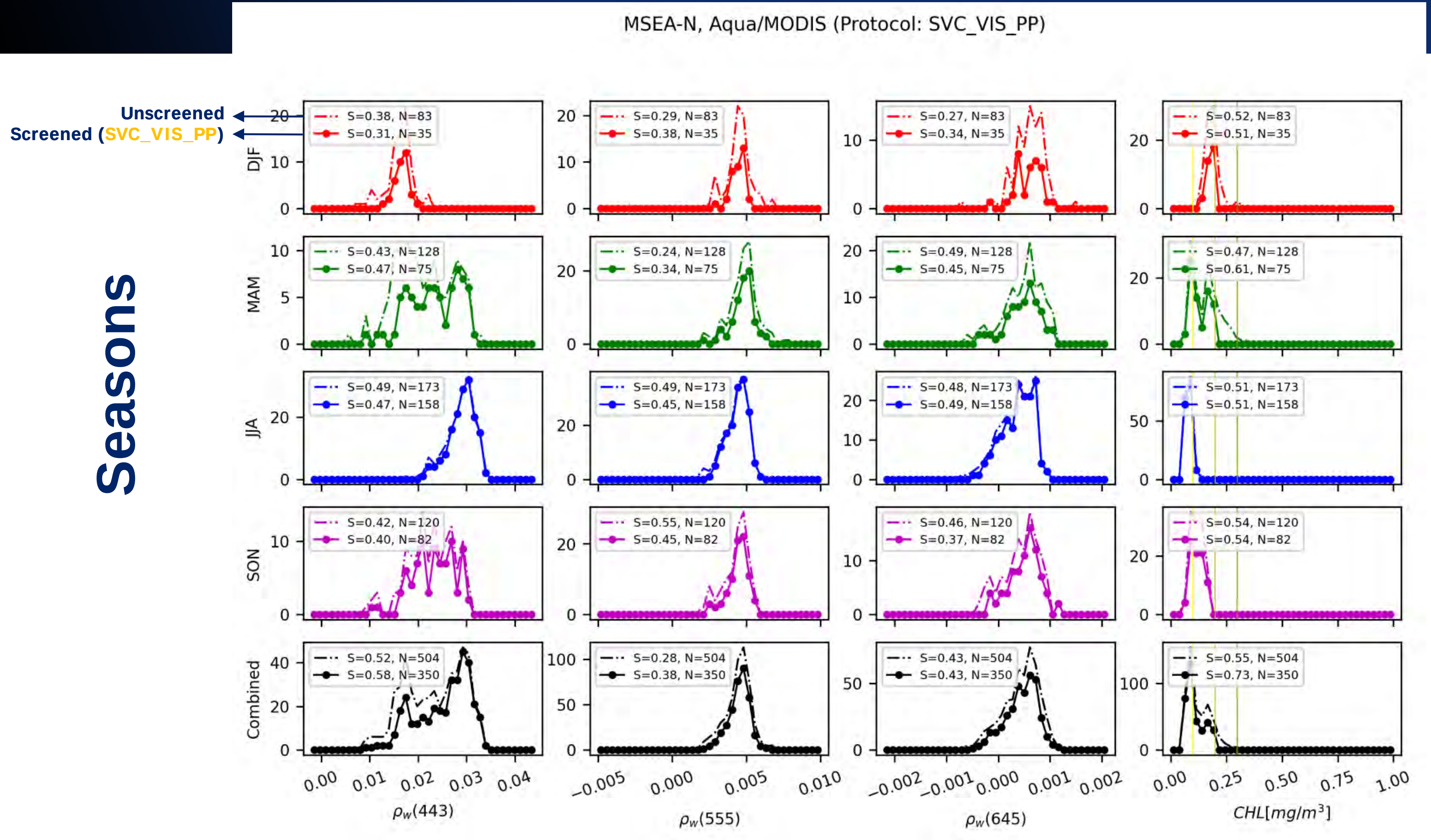
Screened (SVC_VIS_PP)

Seasons



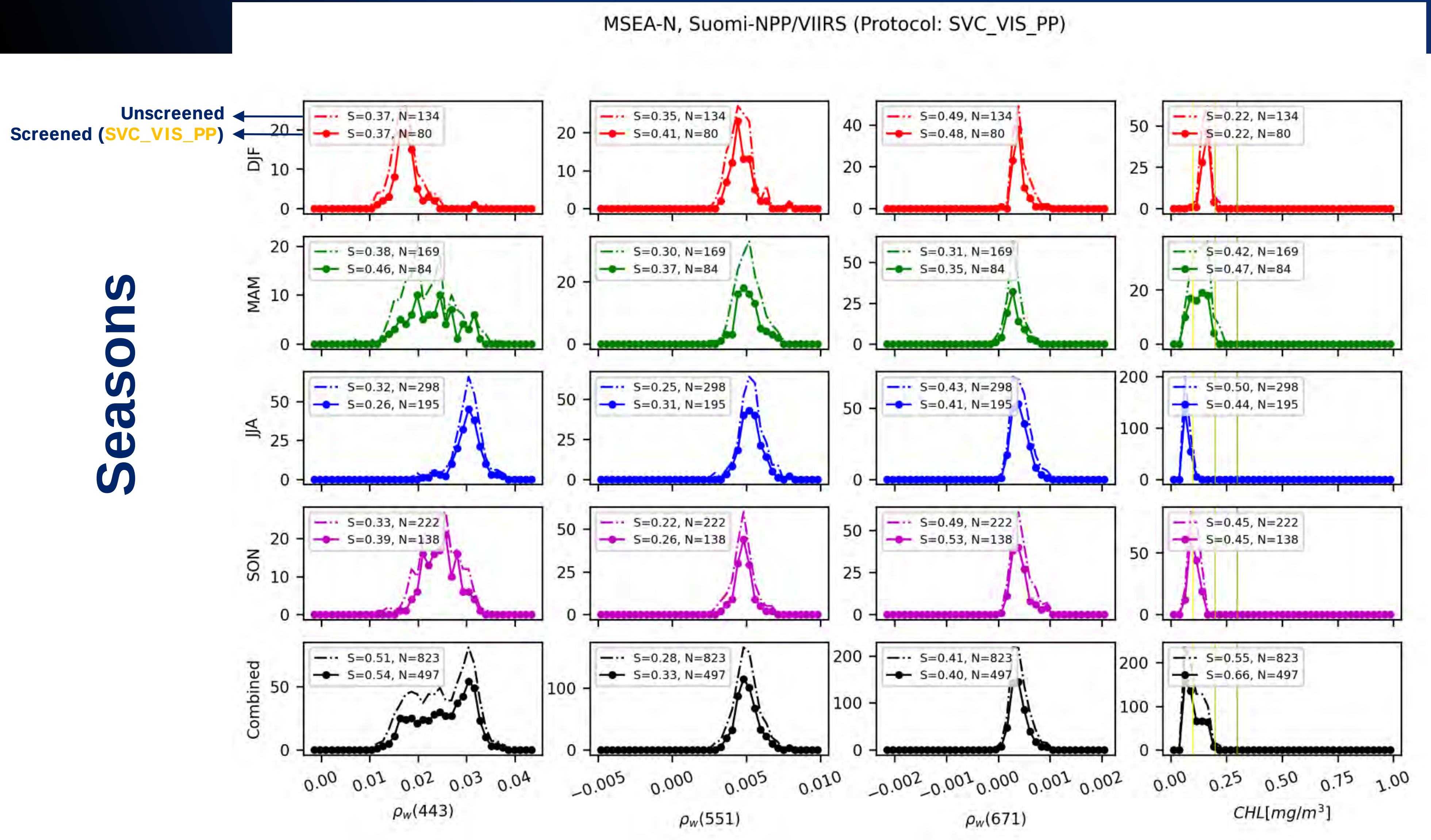
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



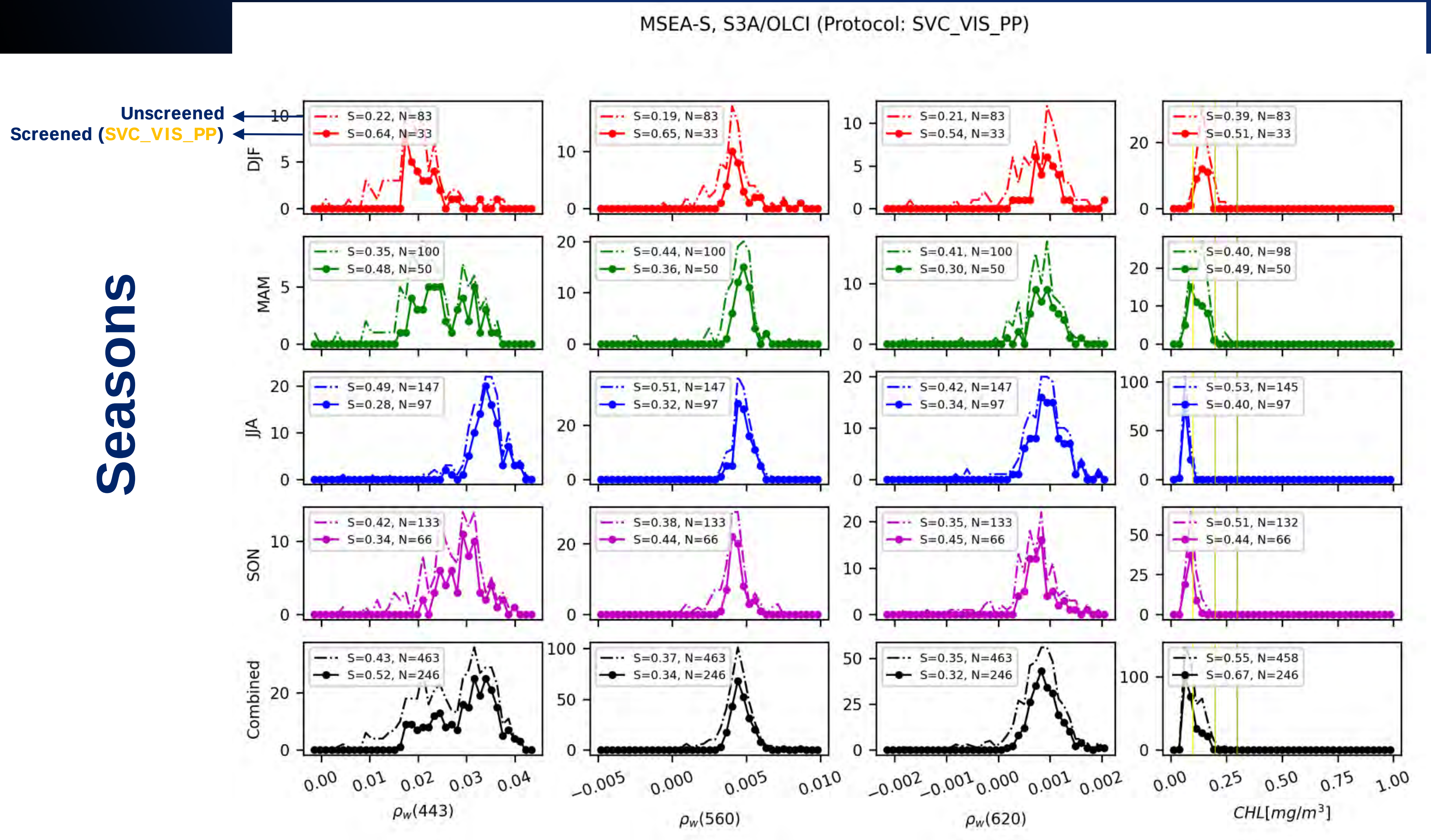
EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



EUMETSAT

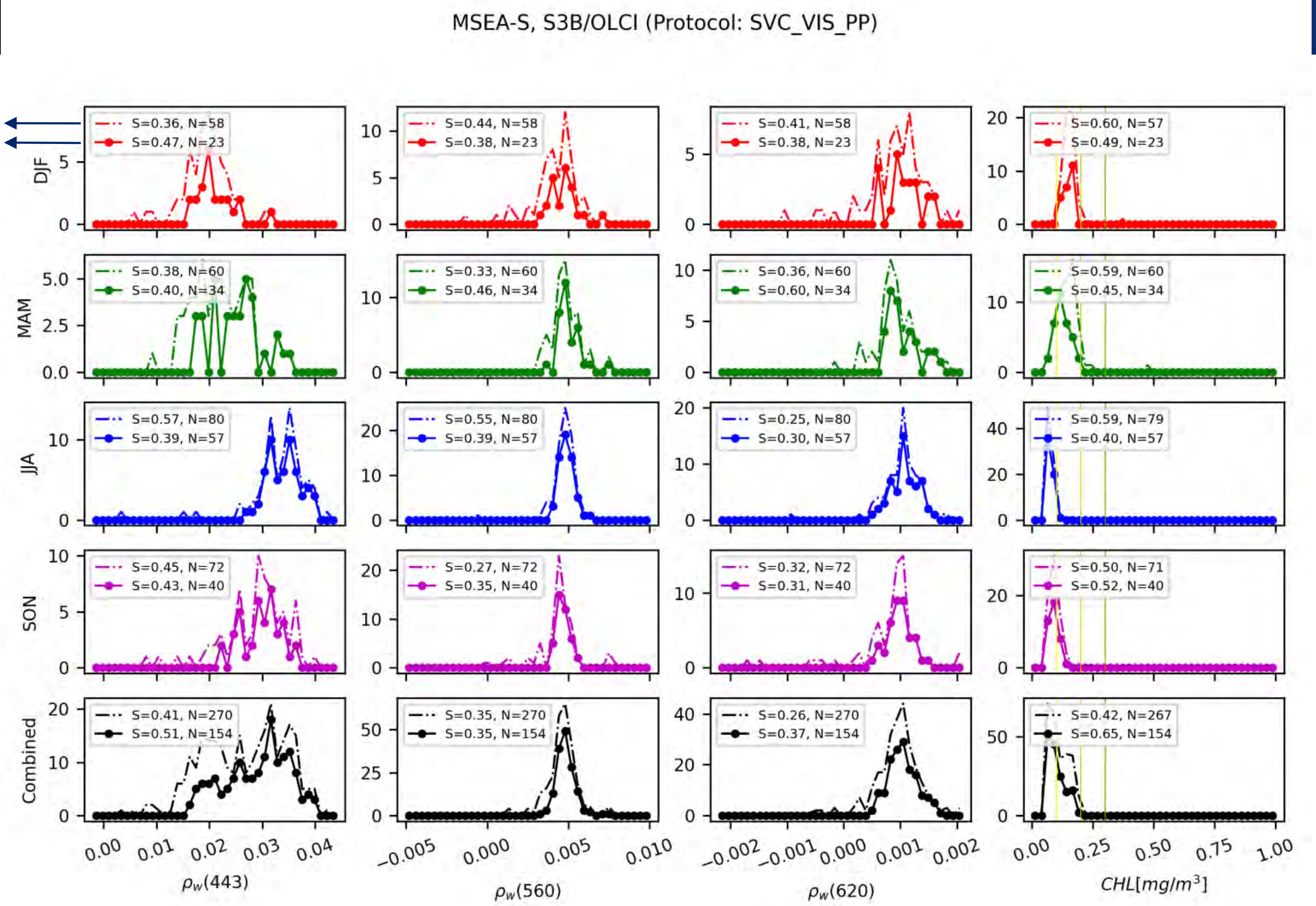
Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

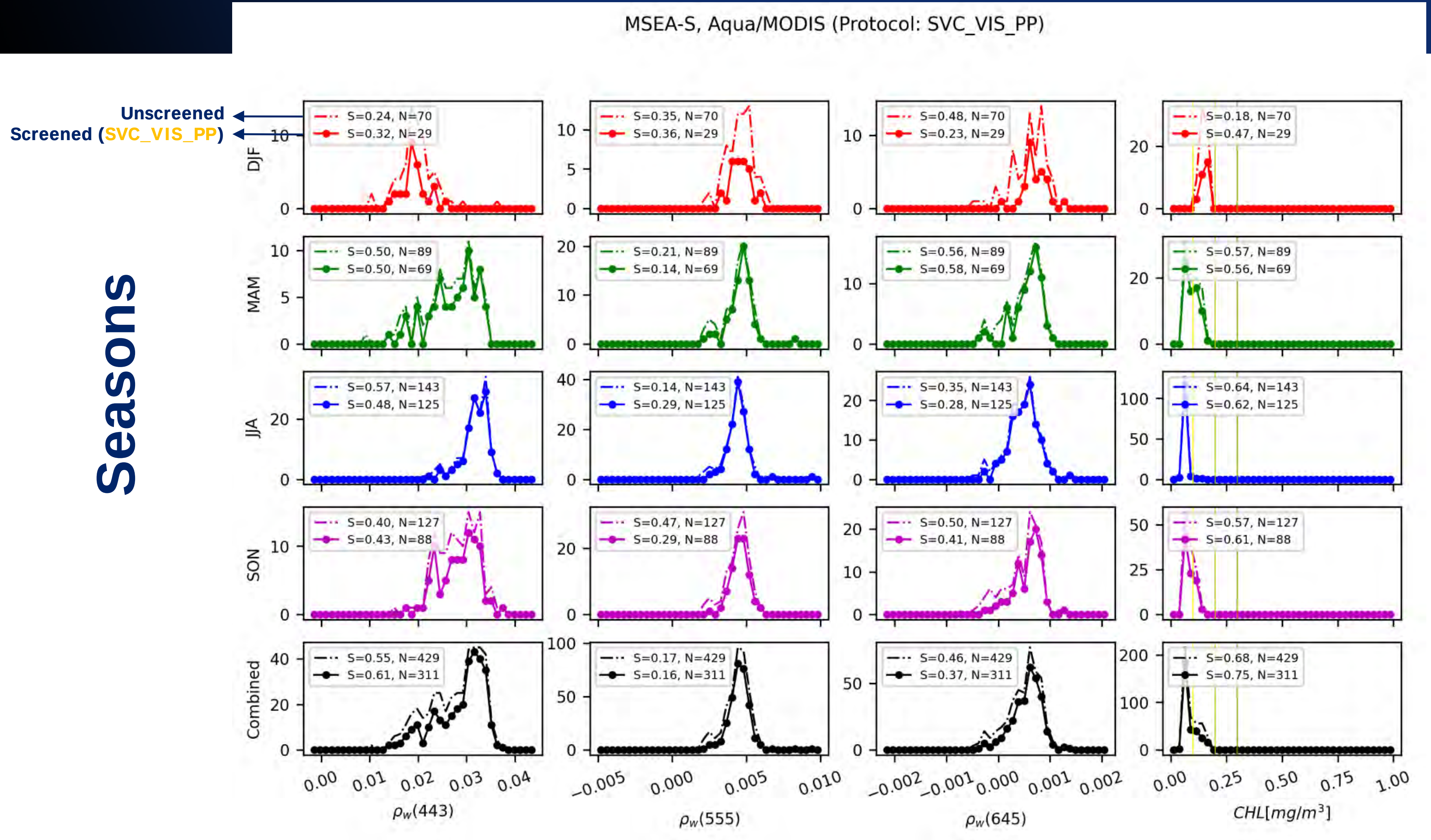
Unscreened
Screened (SVC_VIS_PP)

Seasons

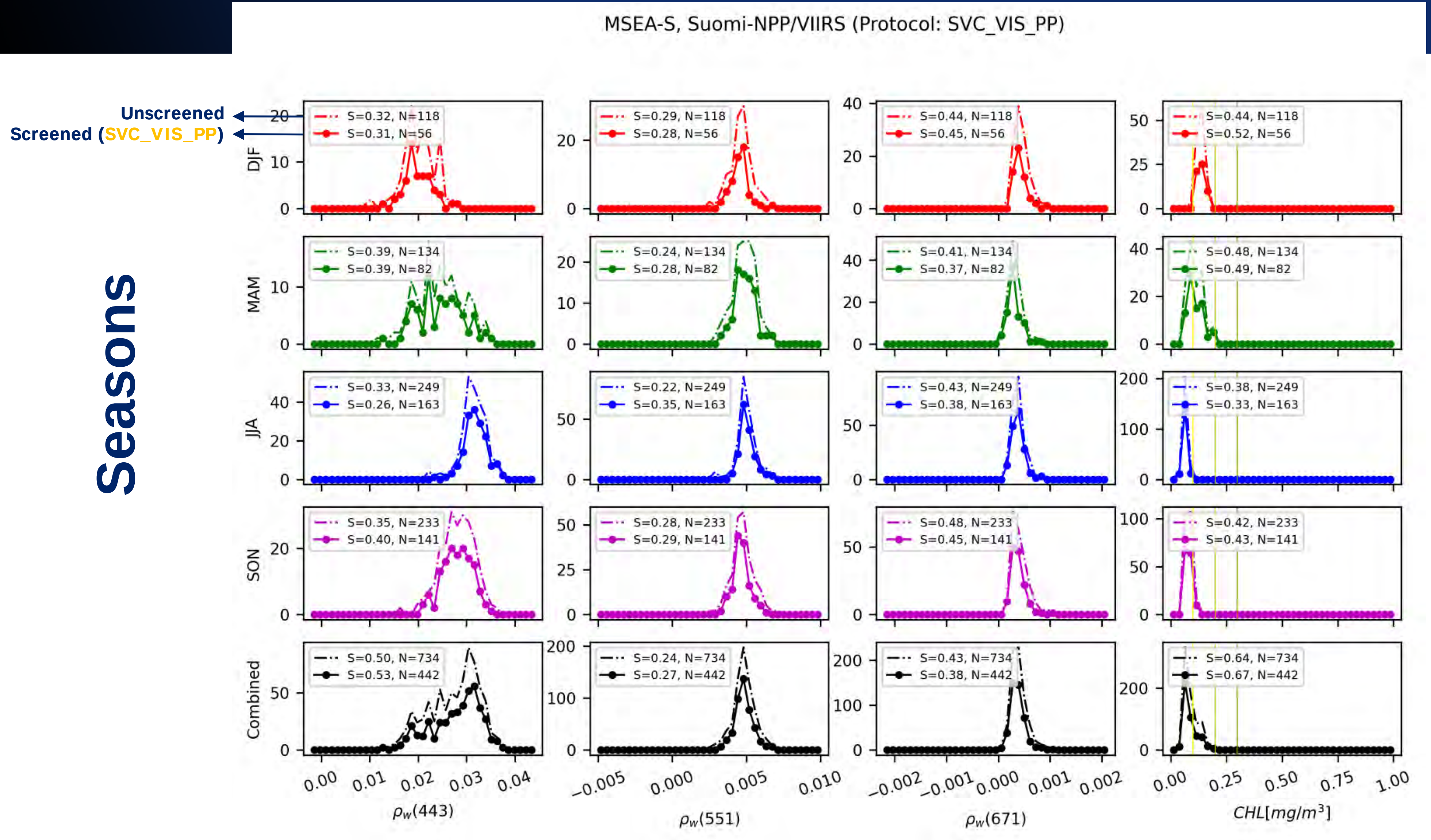


EUMETSAT

Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)



Seasonal variability (unscreened/screened acc. to SVC_VIS_PP)

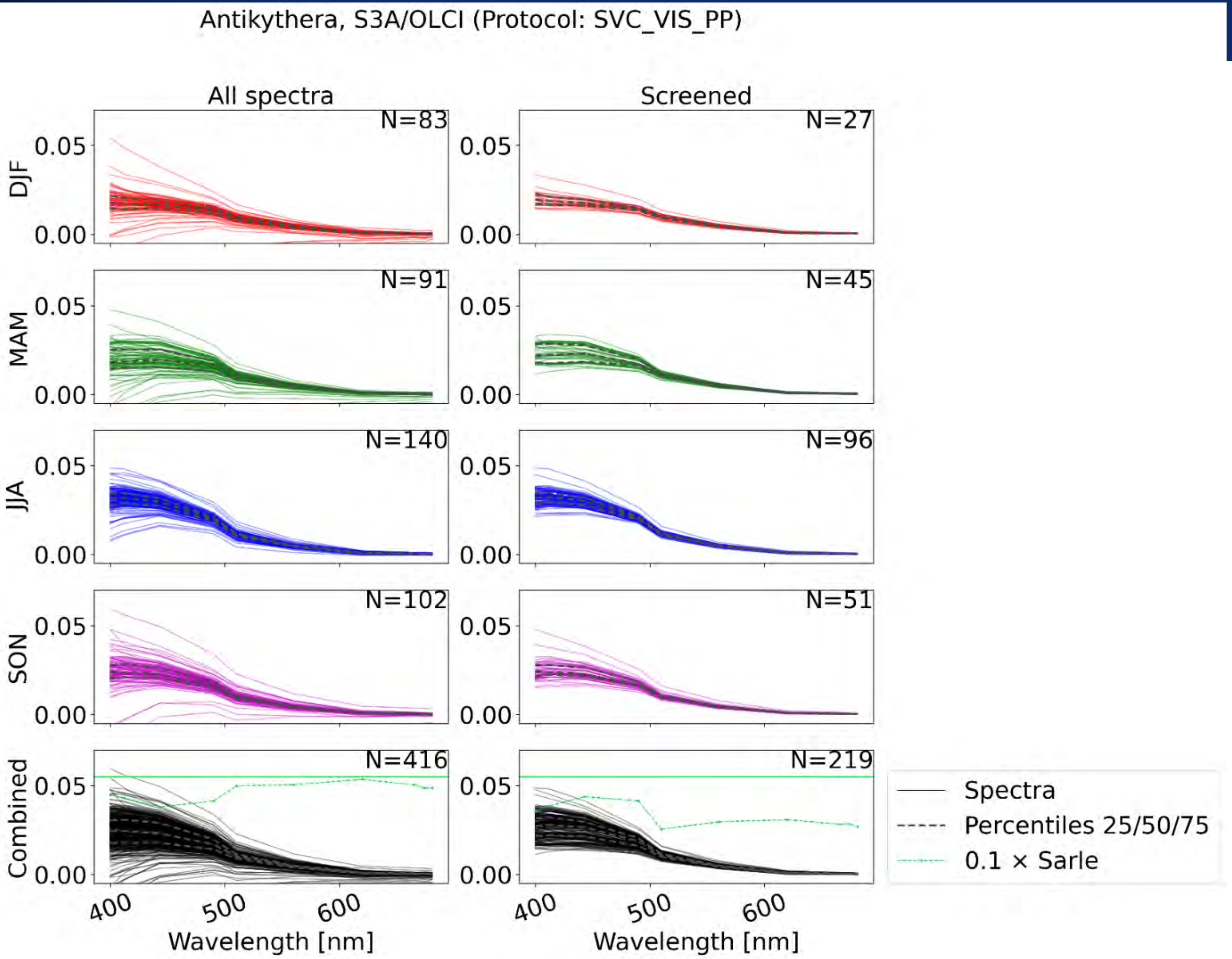


EUMETSAT

Spectra (unscreened and screened according to **SVC_VIS_PP**)

Spectra (all and screened according to SVC_VIS_PP)

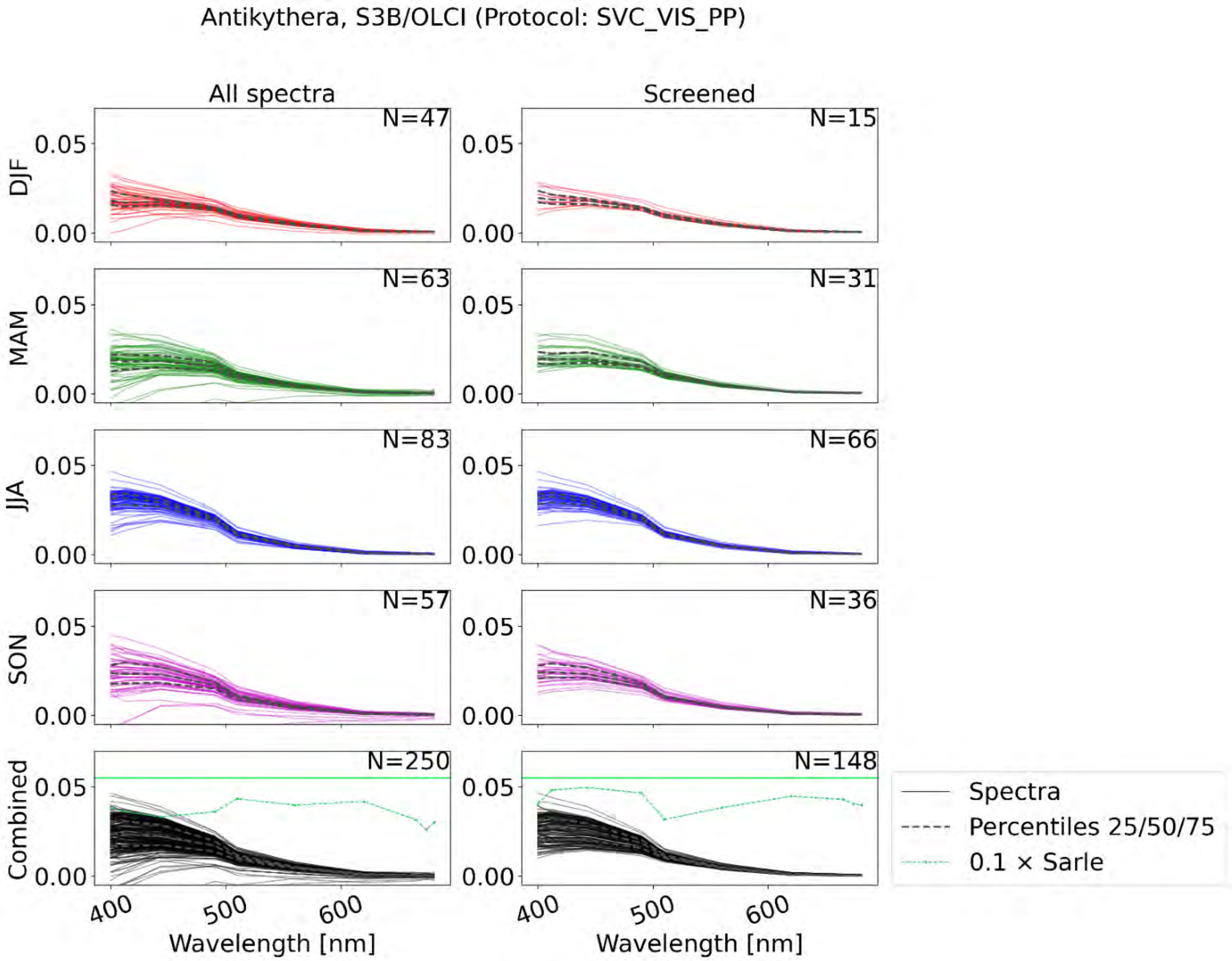
Seasons



EUMETSAT

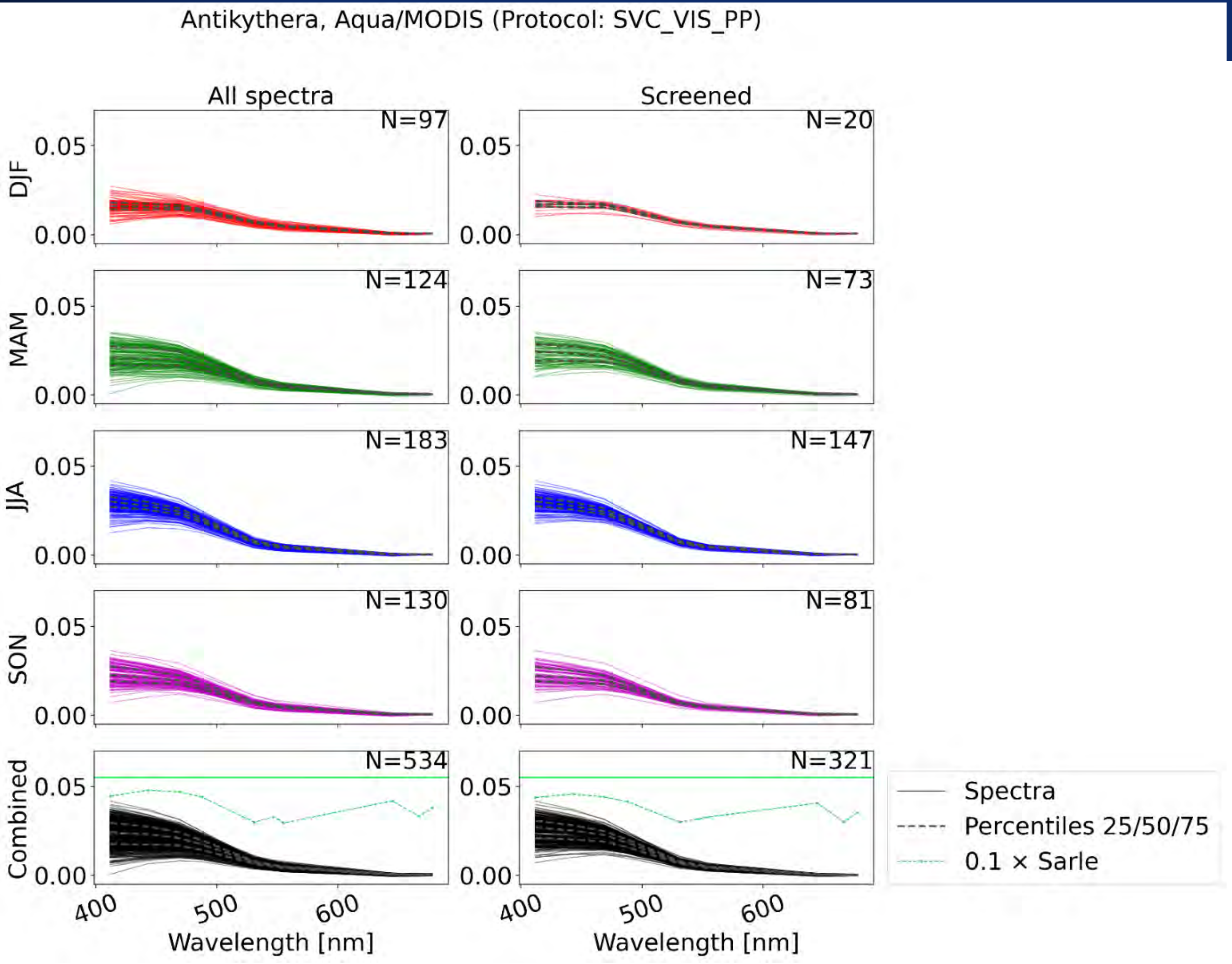
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

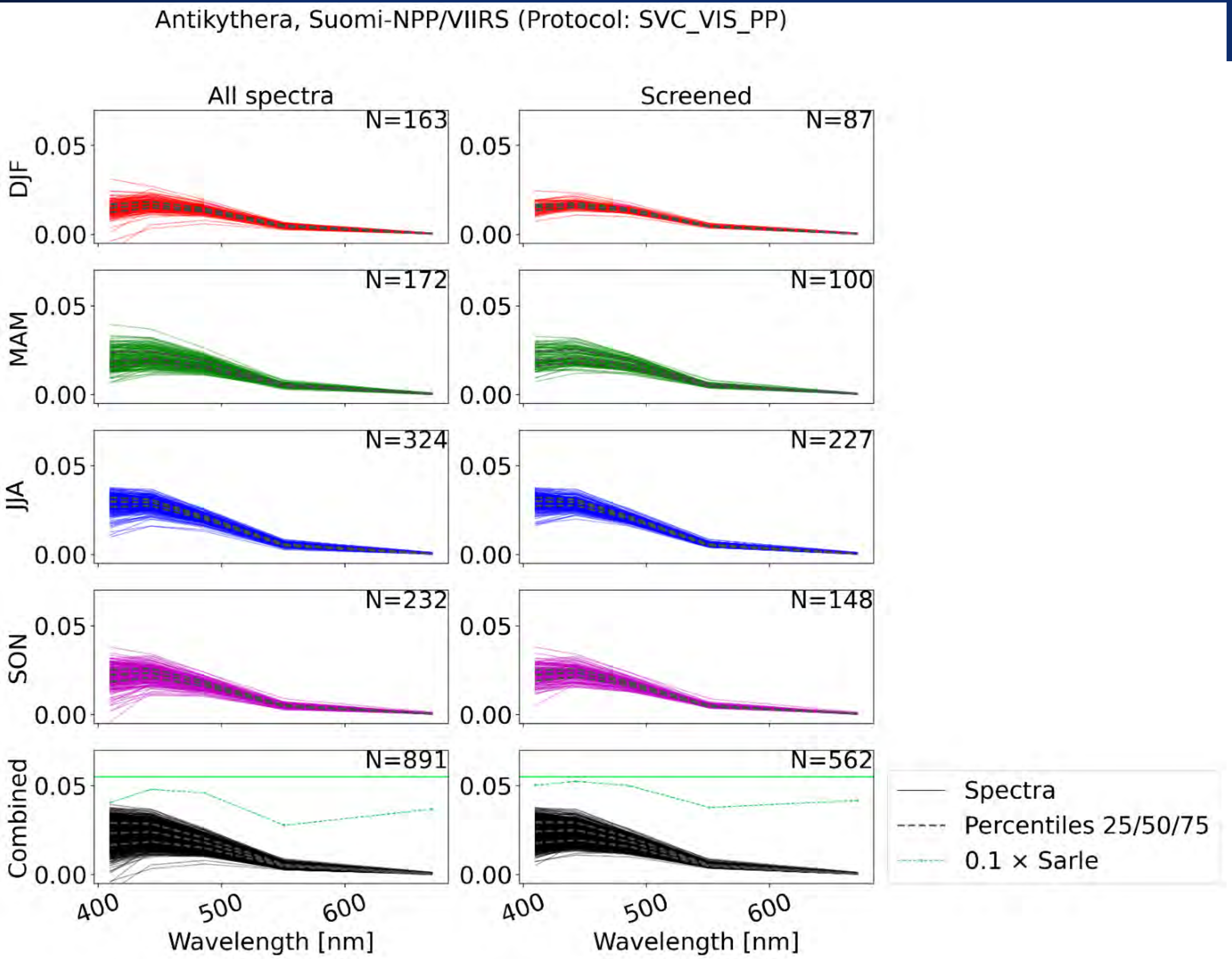
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

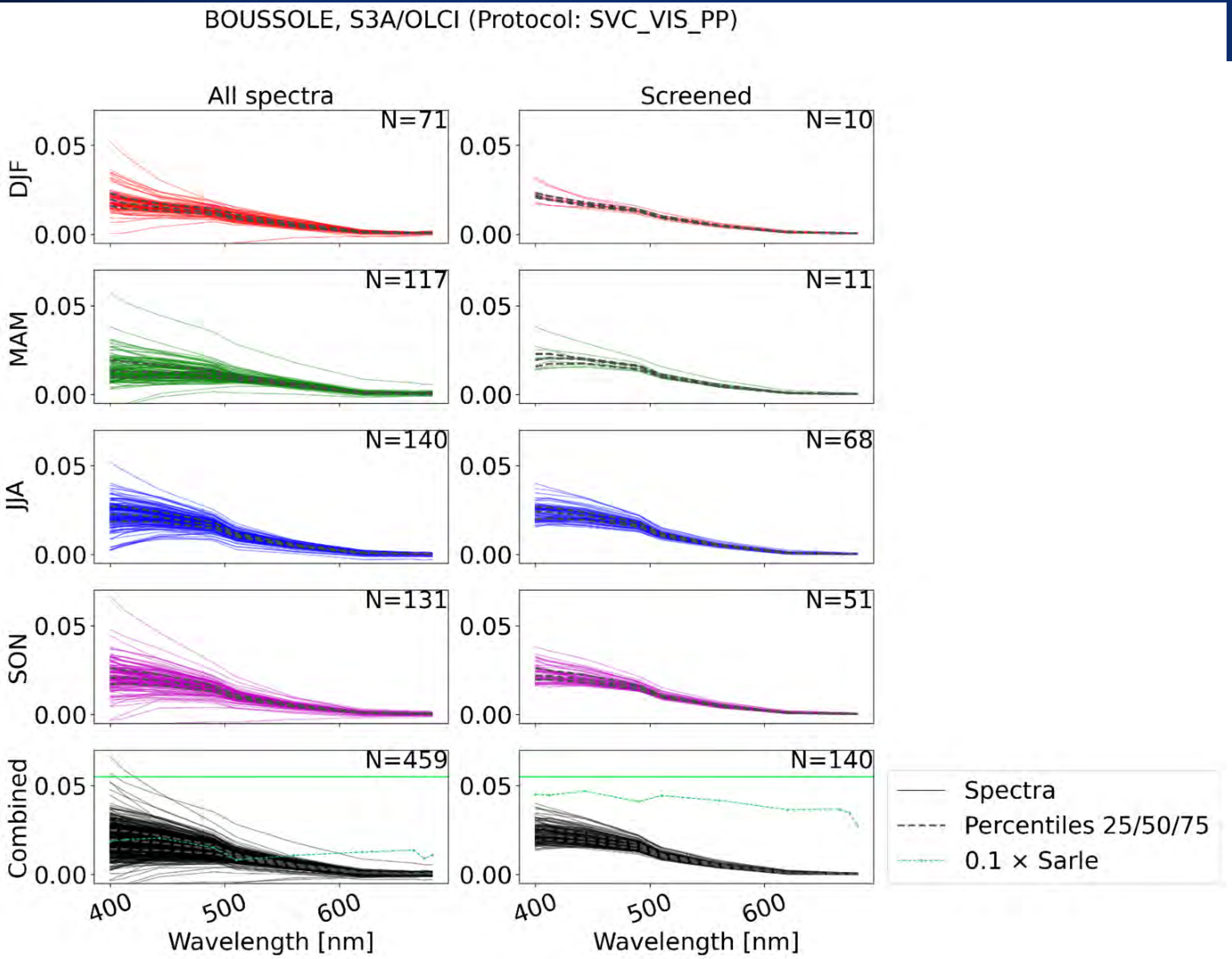
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

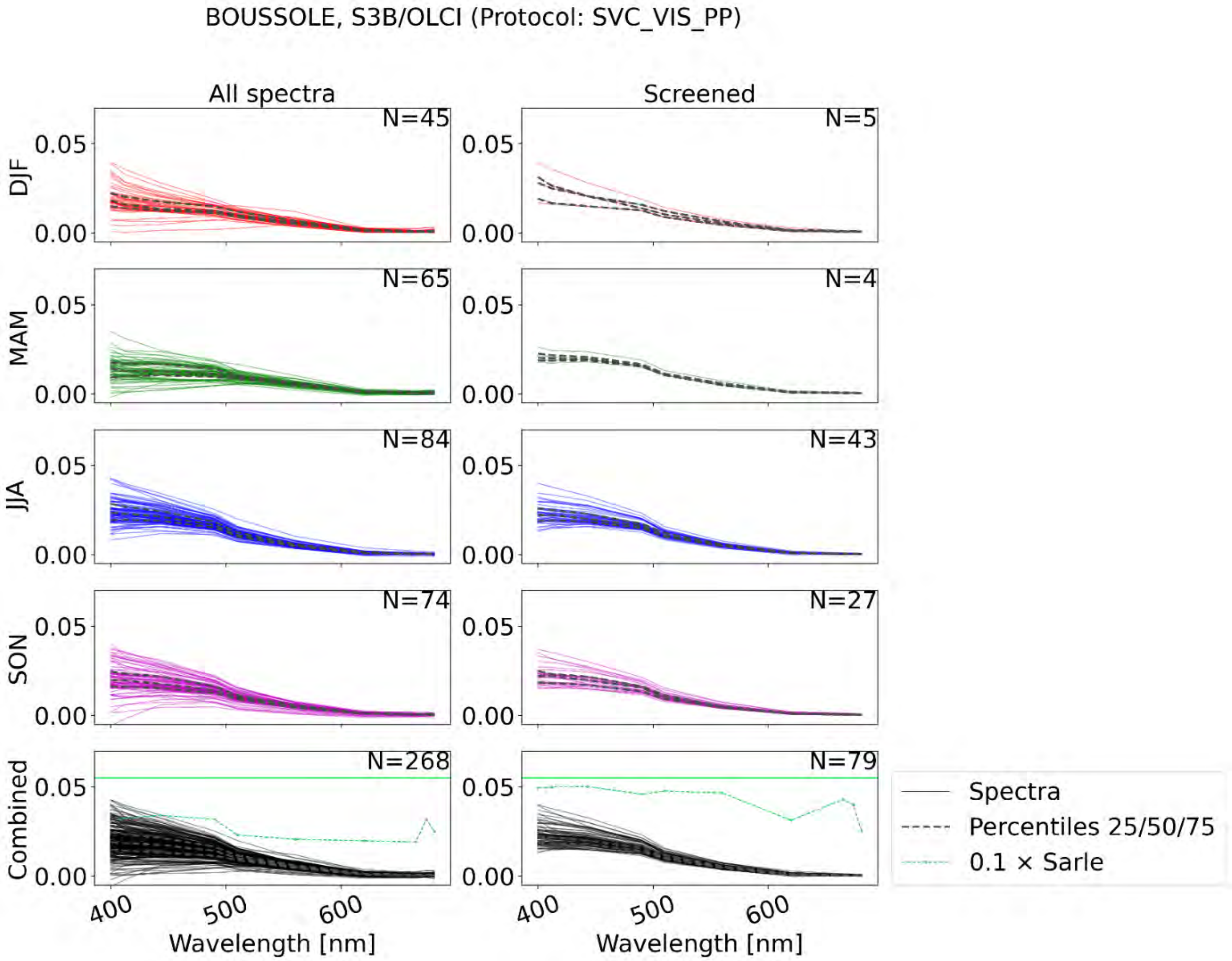
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

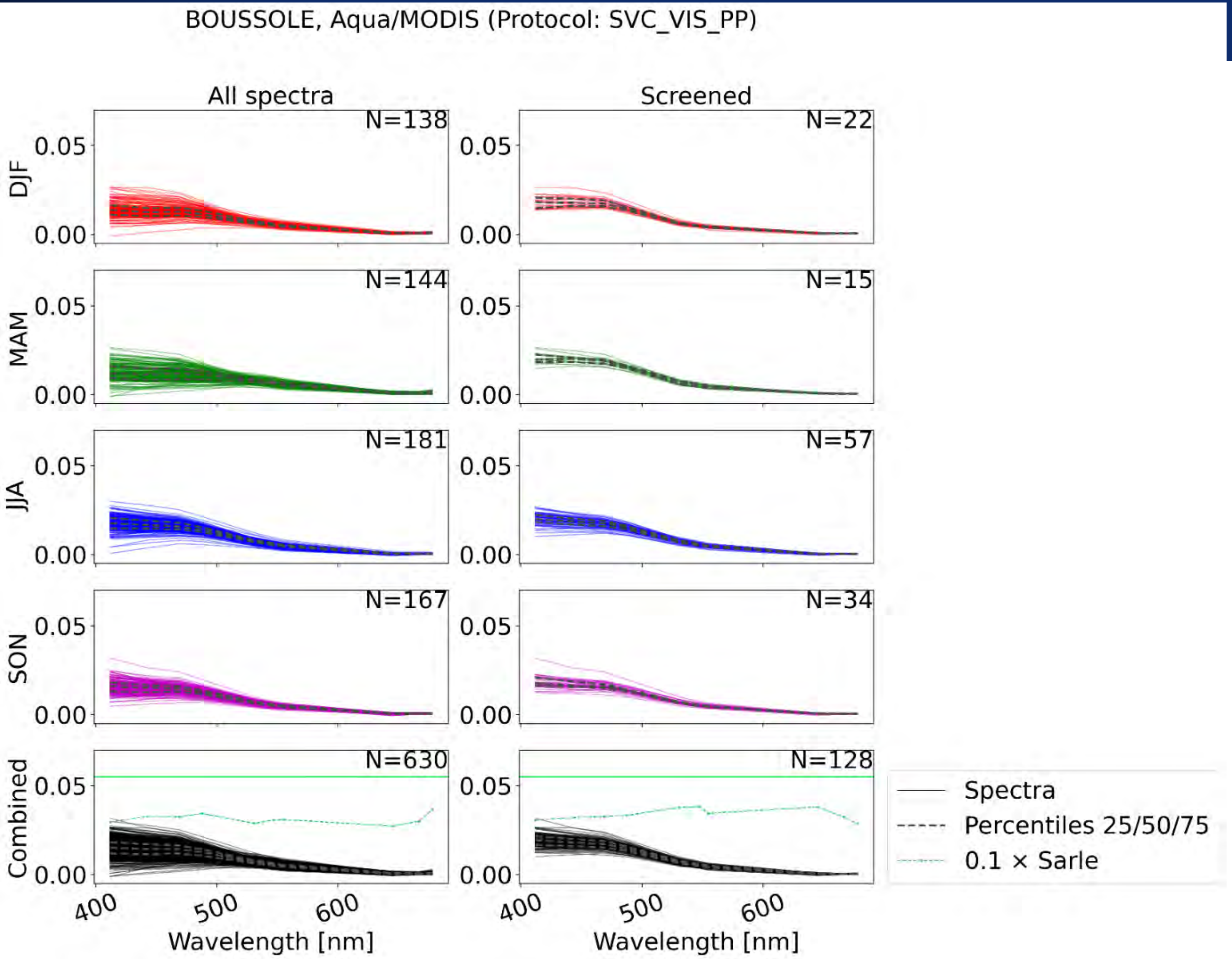
Seasons



EUMETSAT

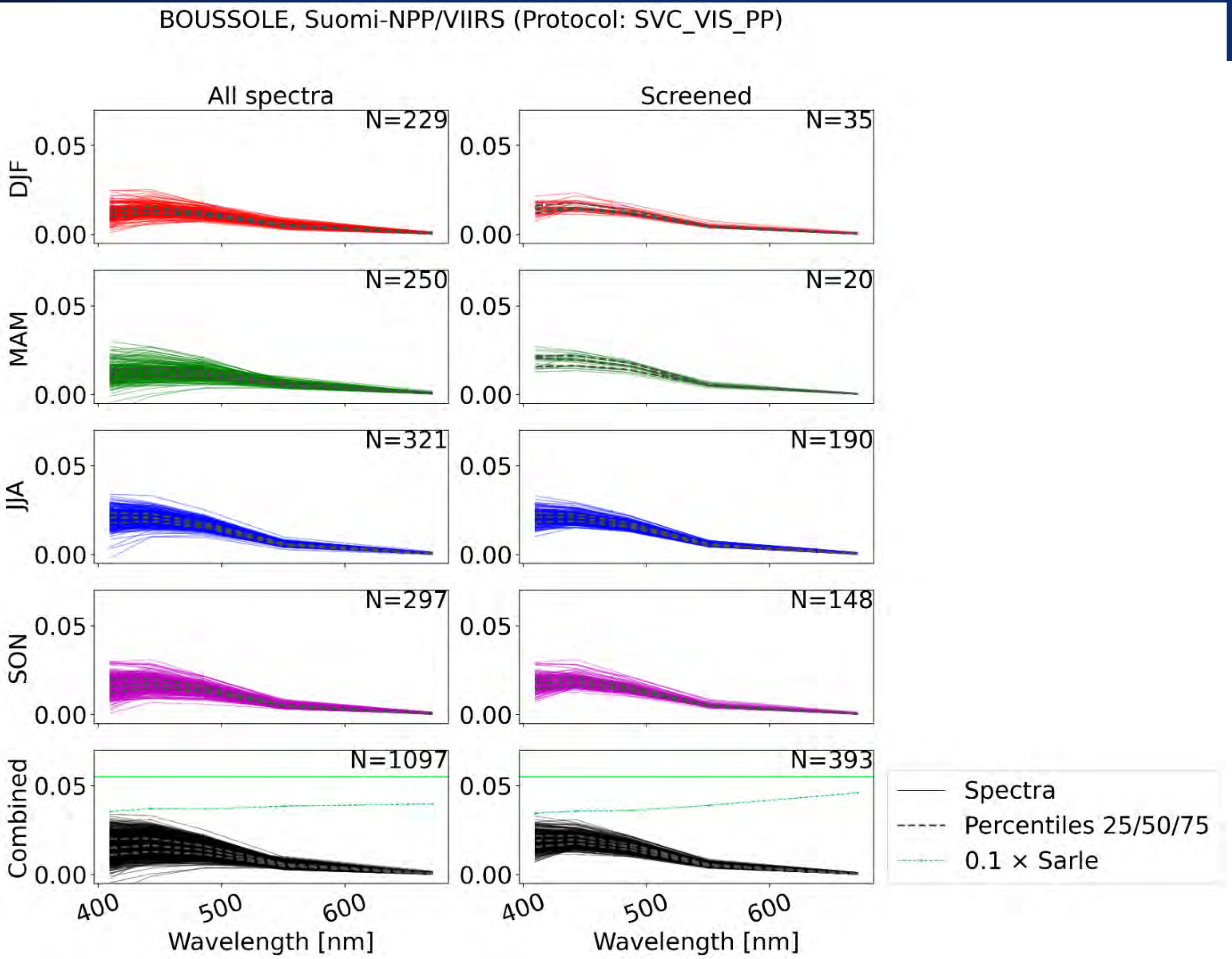
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

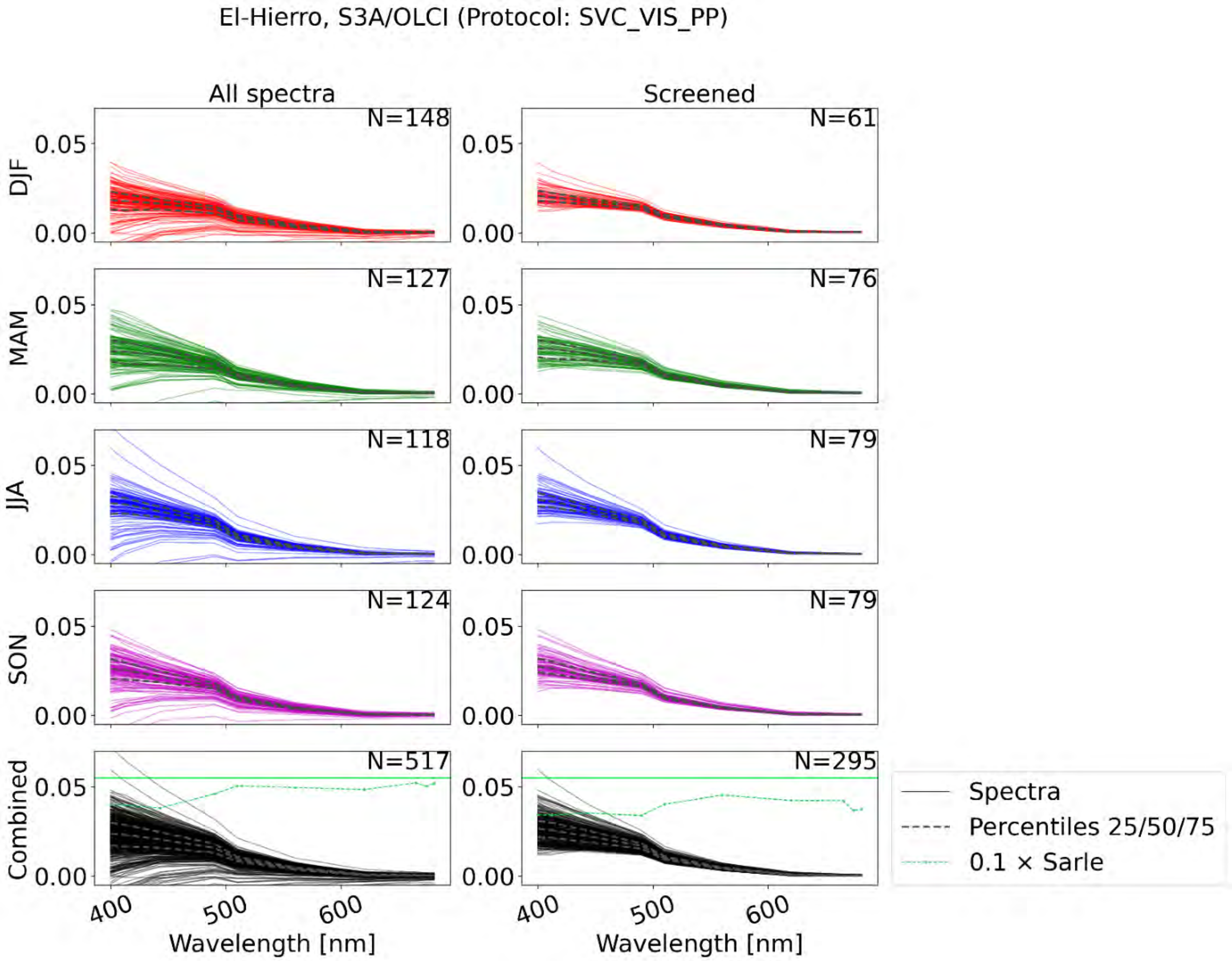
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

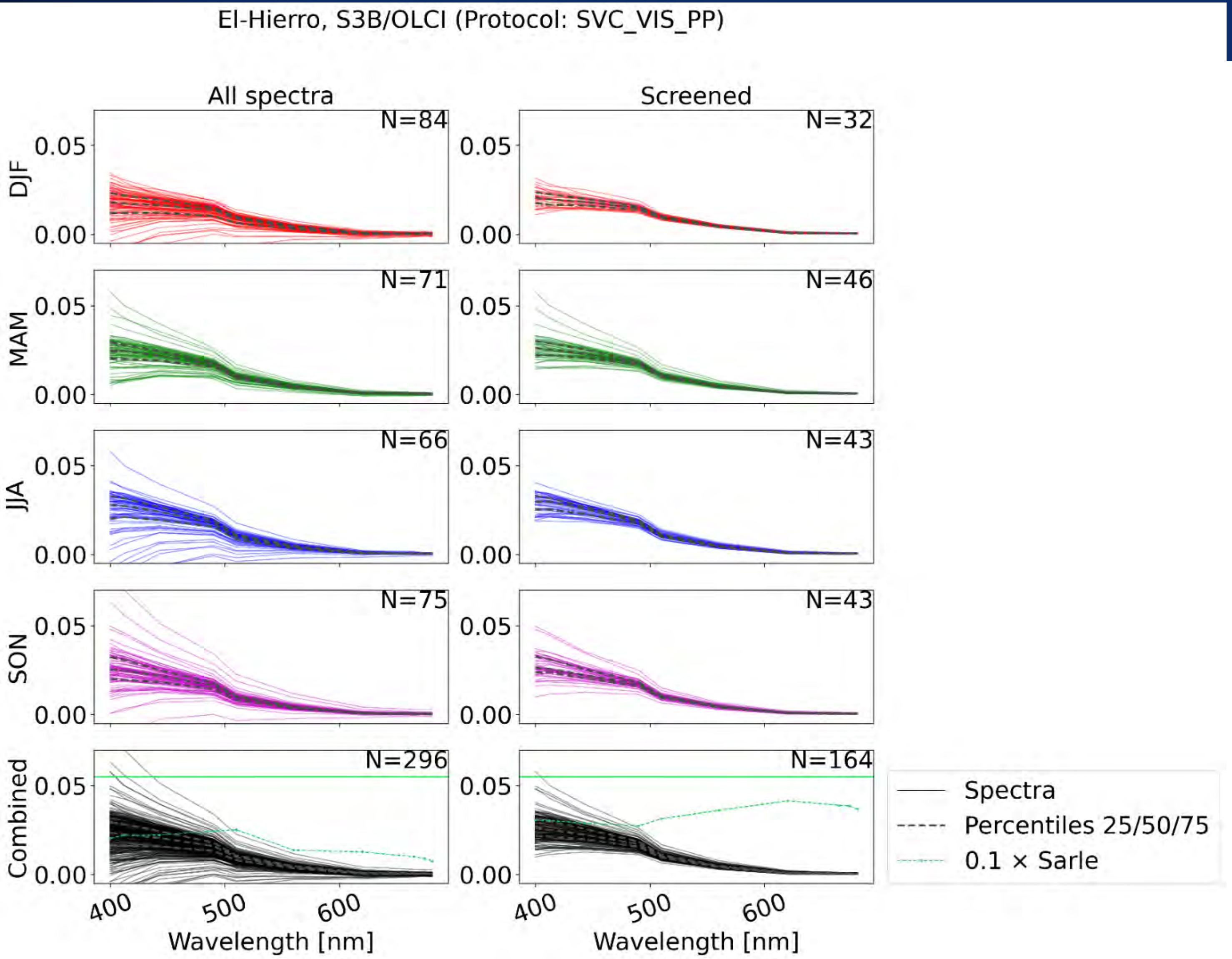
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

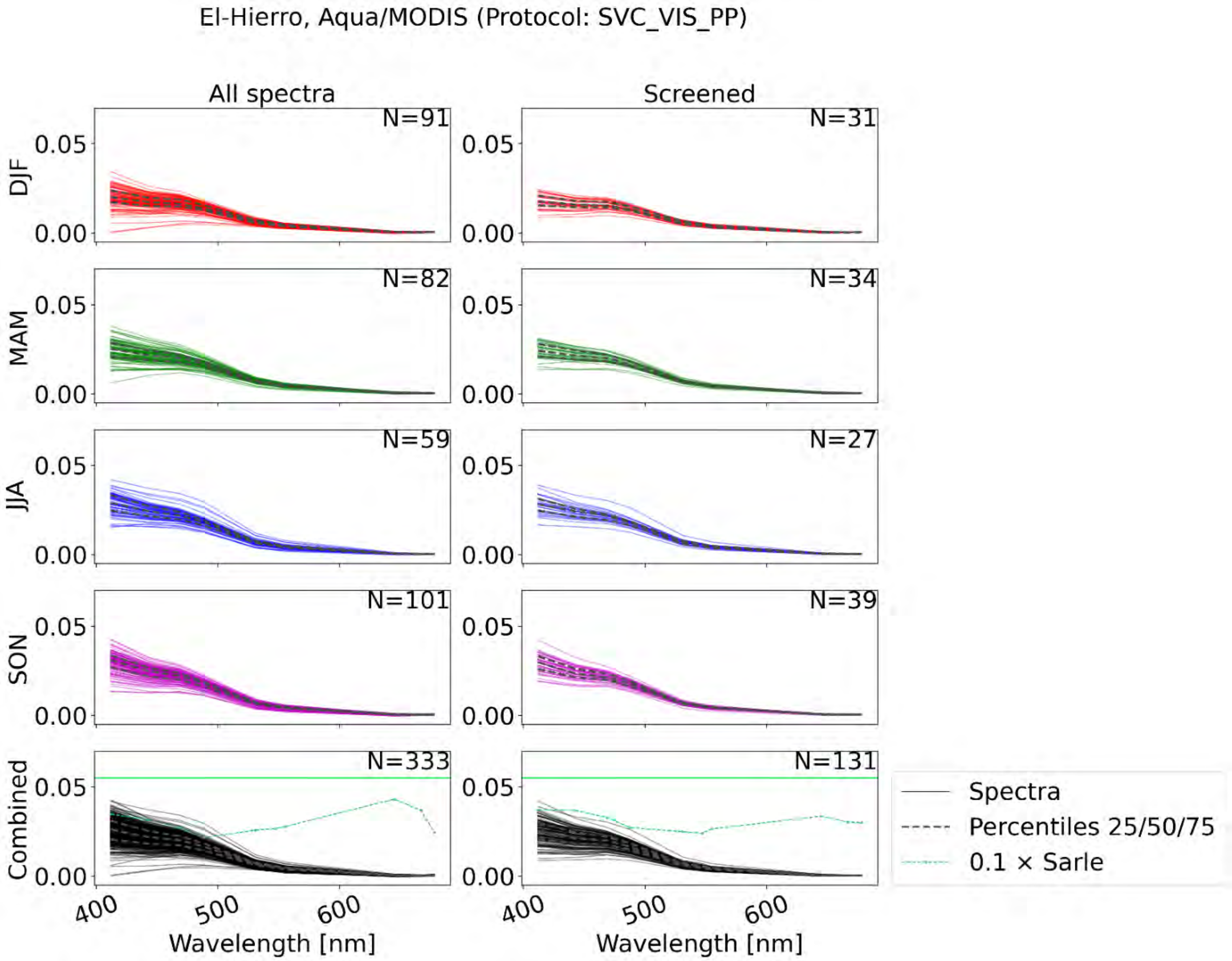
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

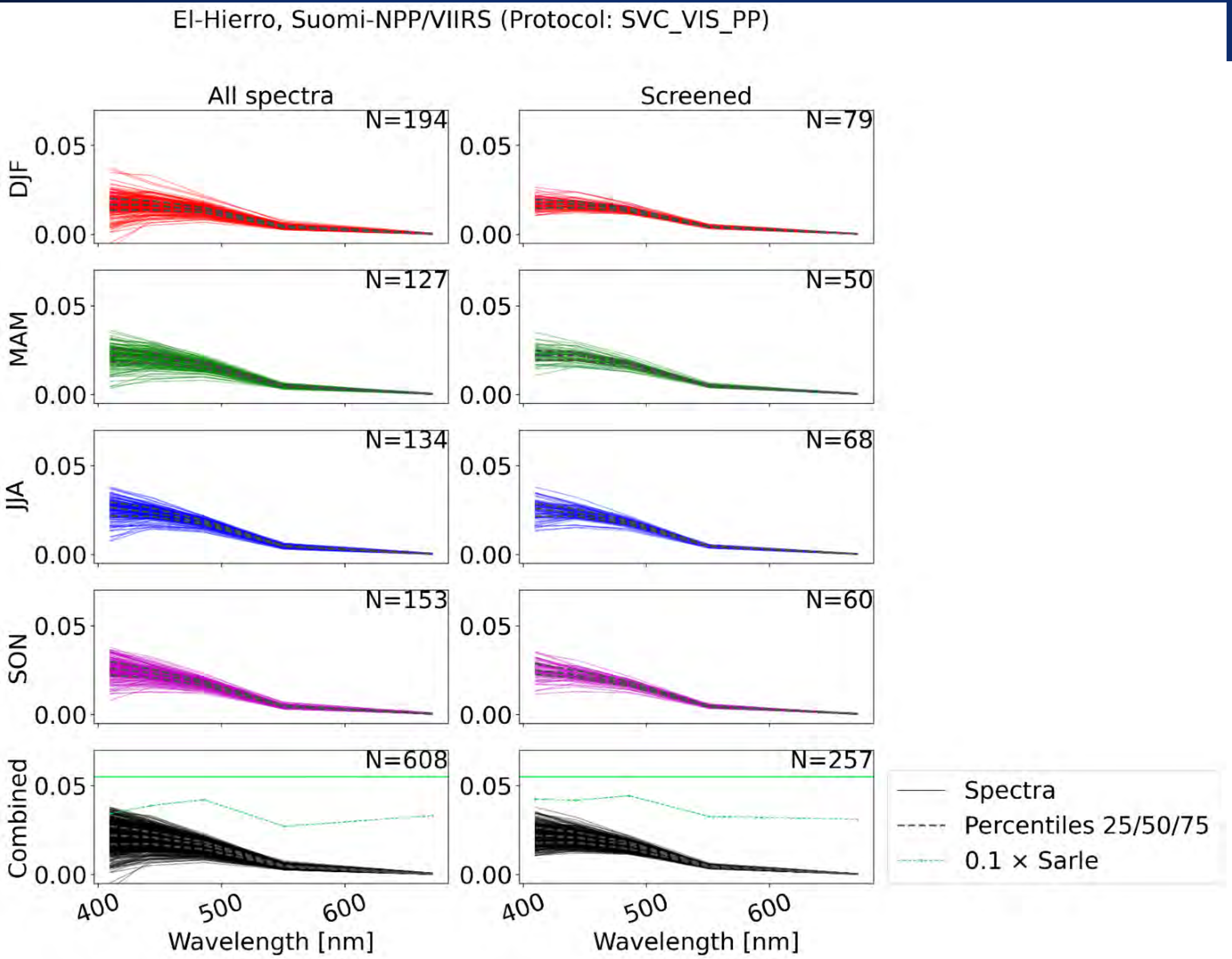
Seasons



EUMETSAT

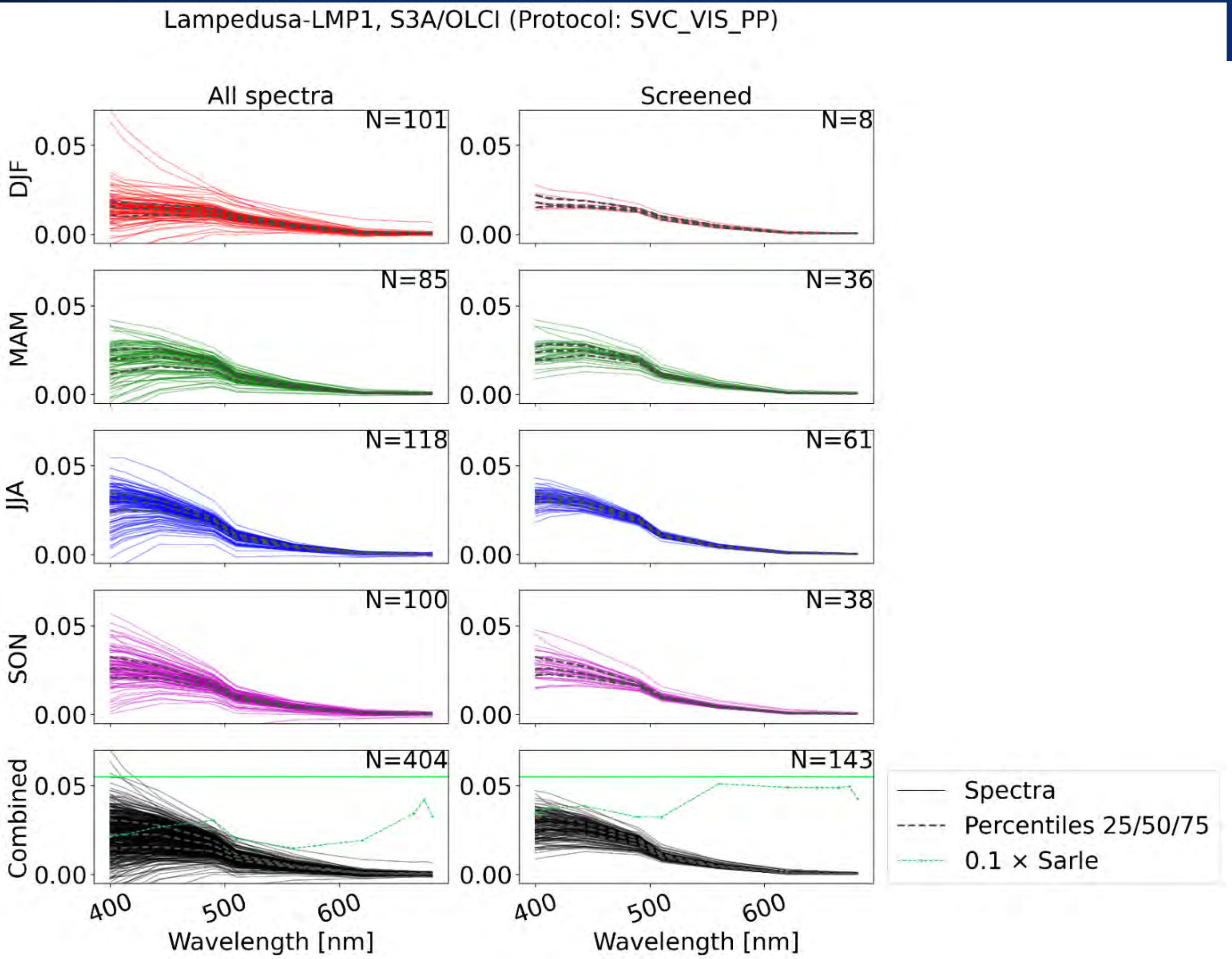
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

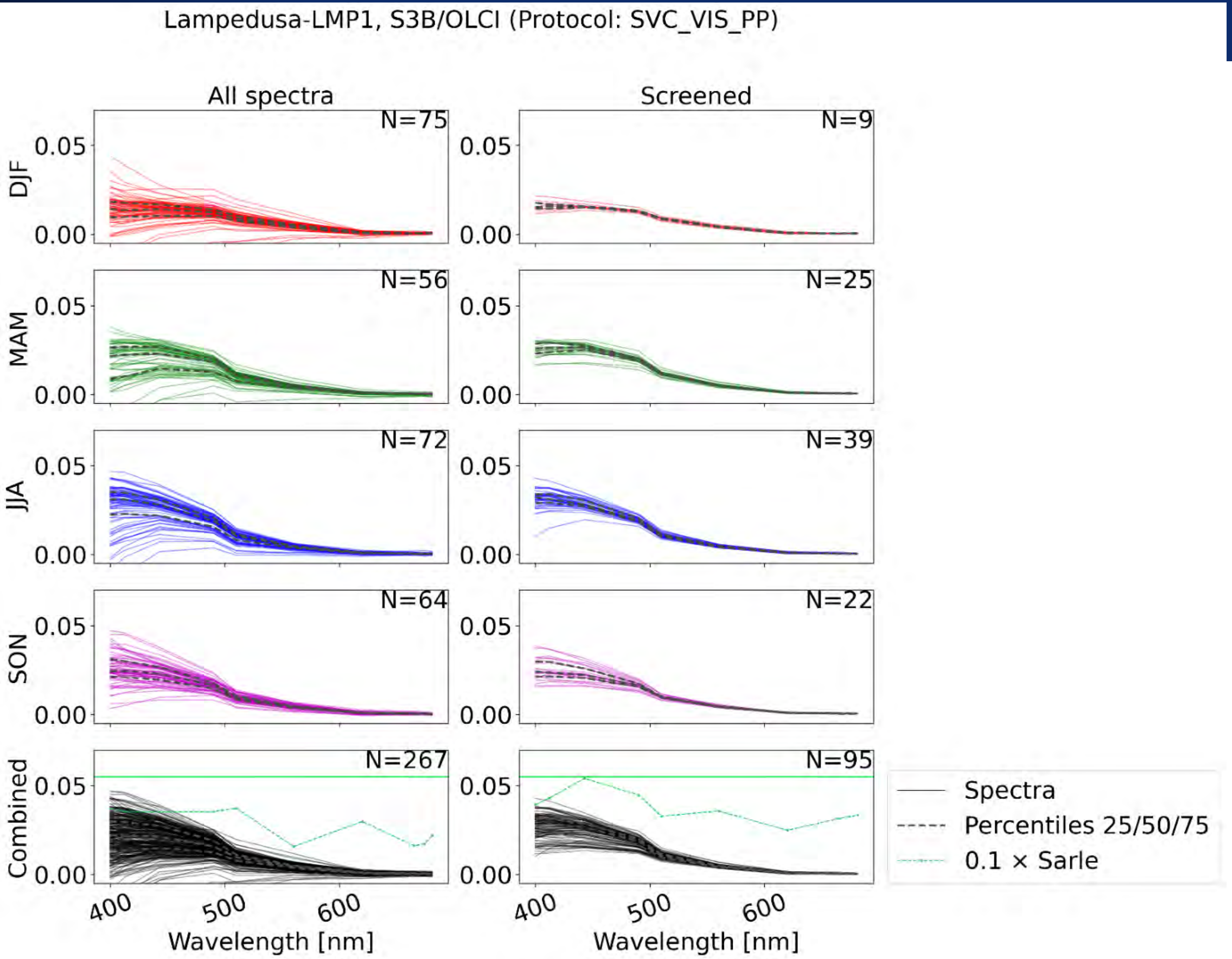
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

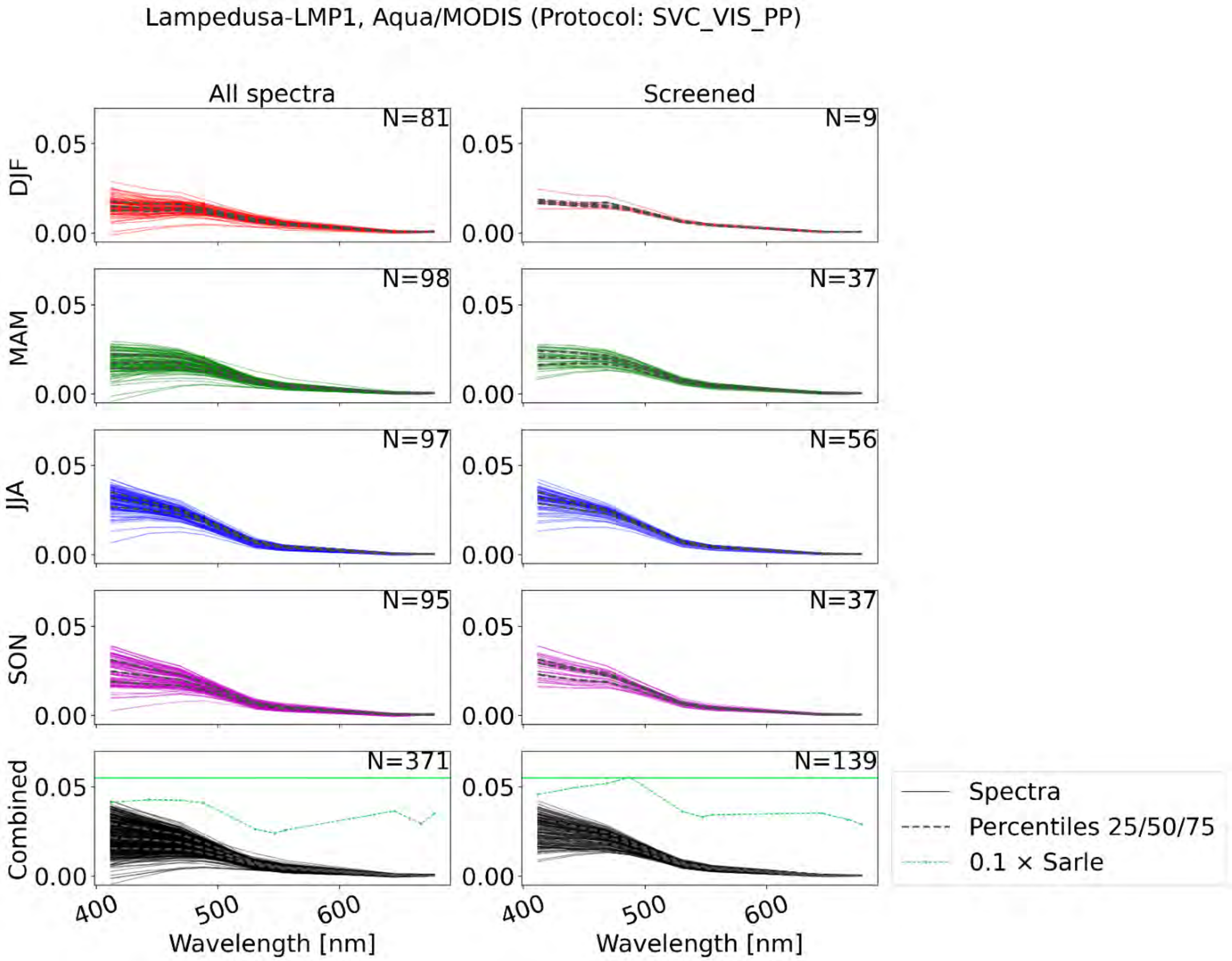
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

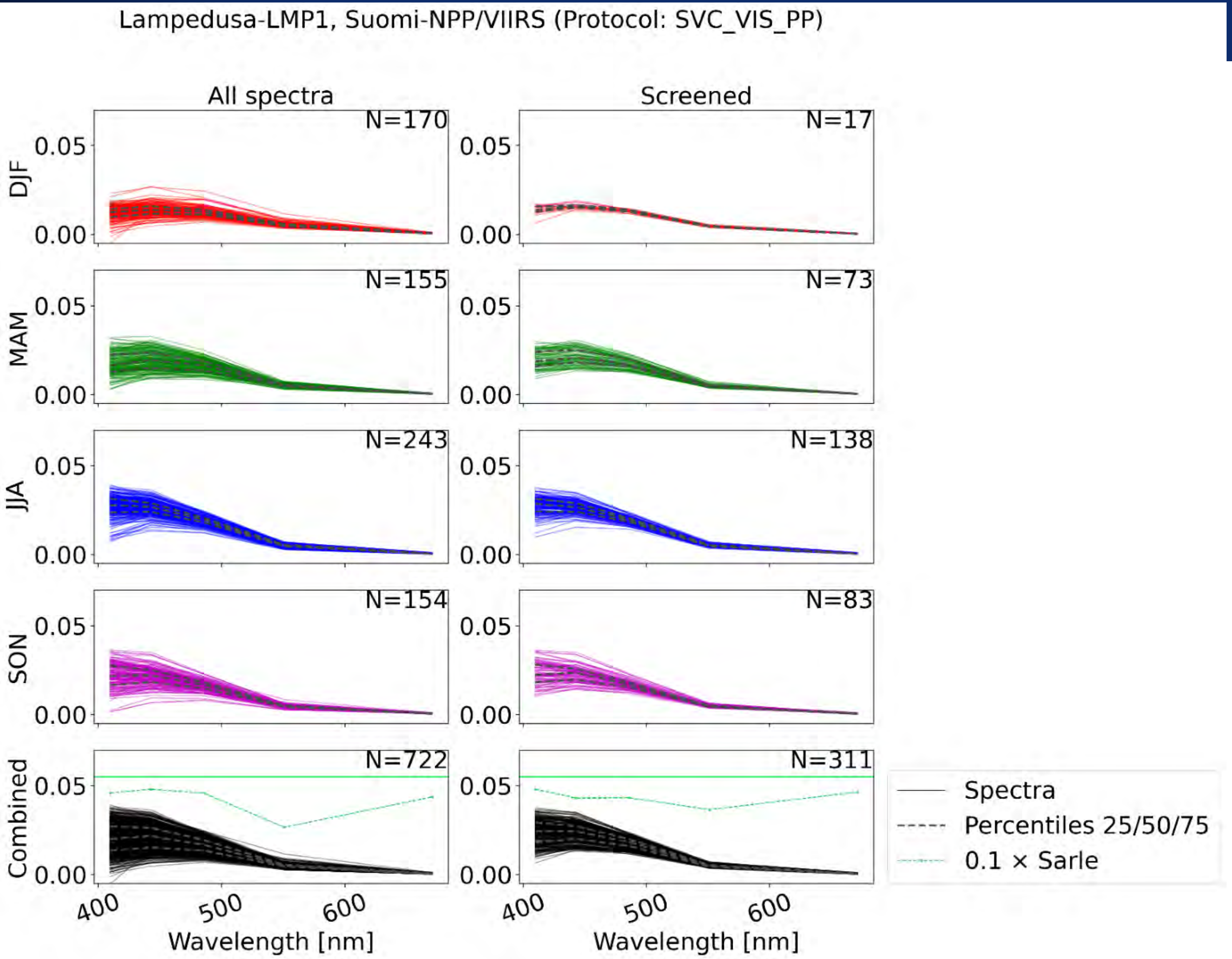
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

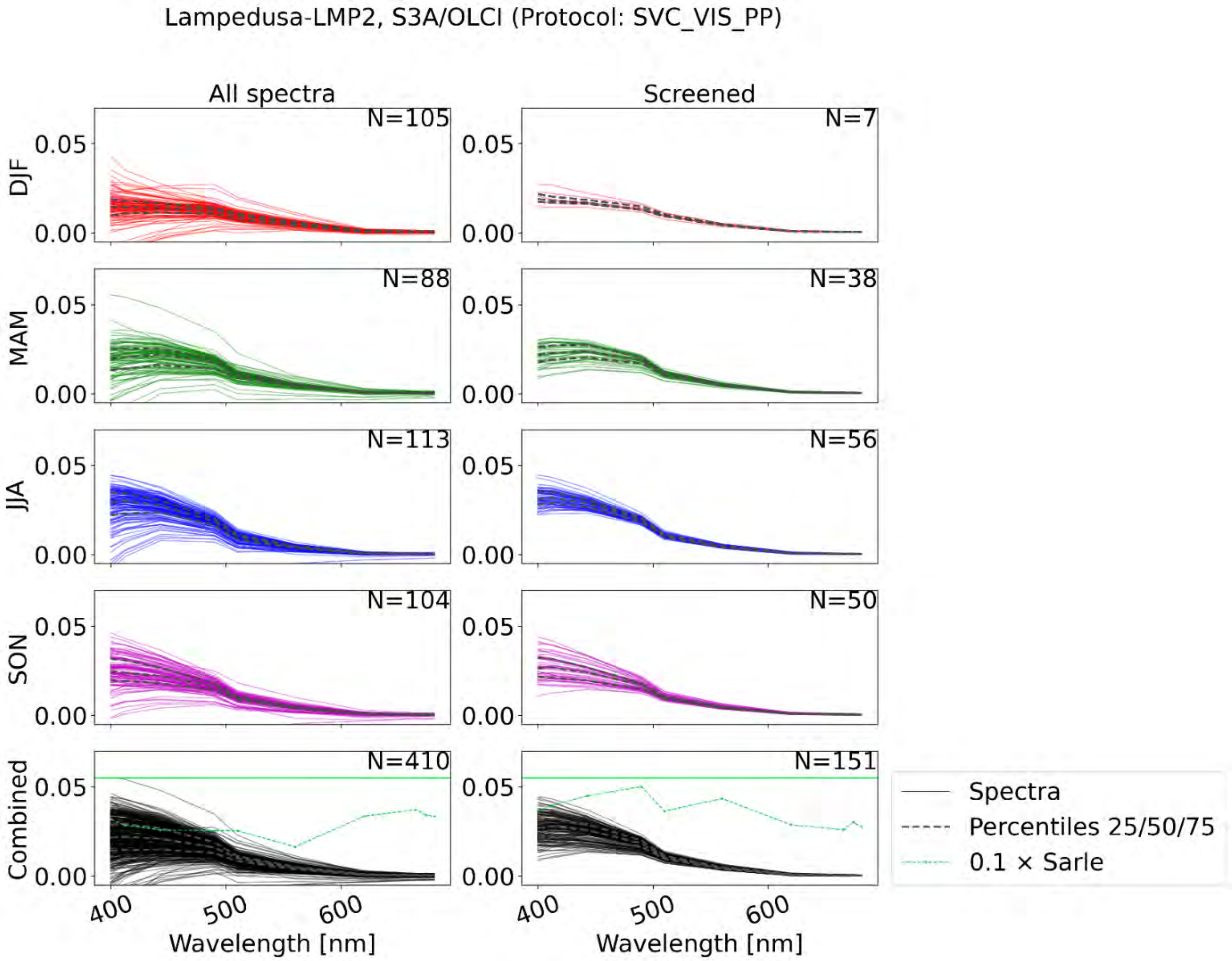
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

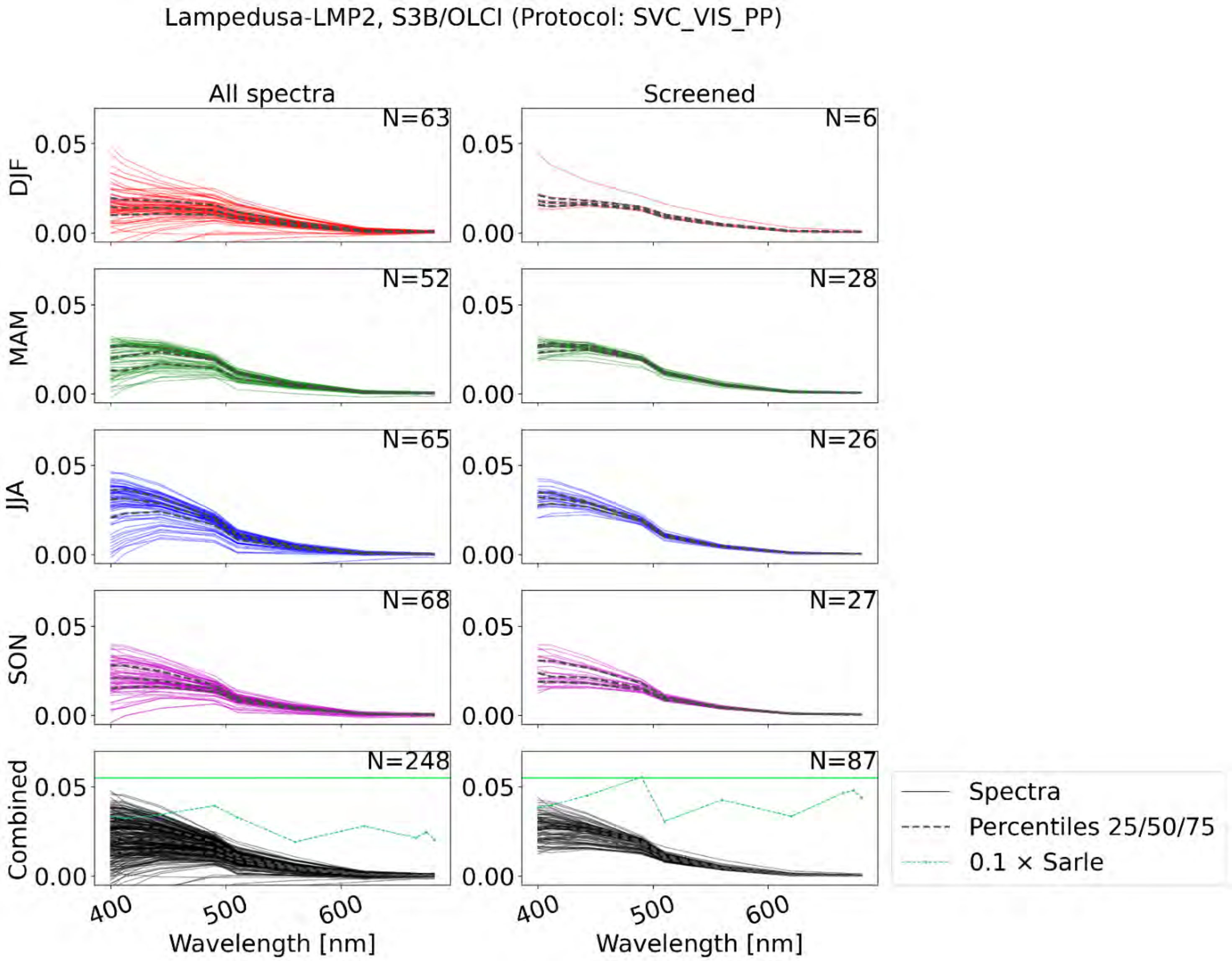
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

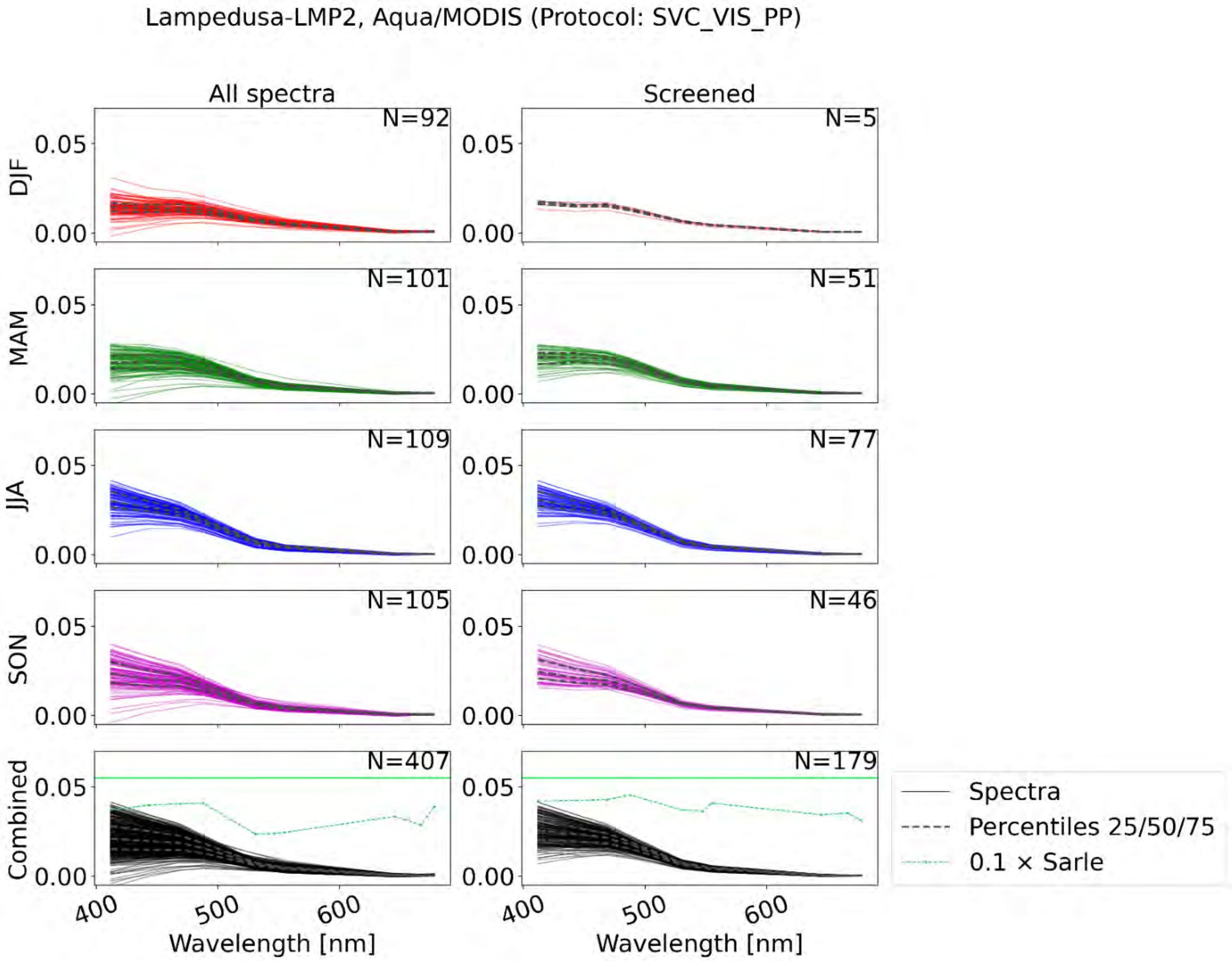
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

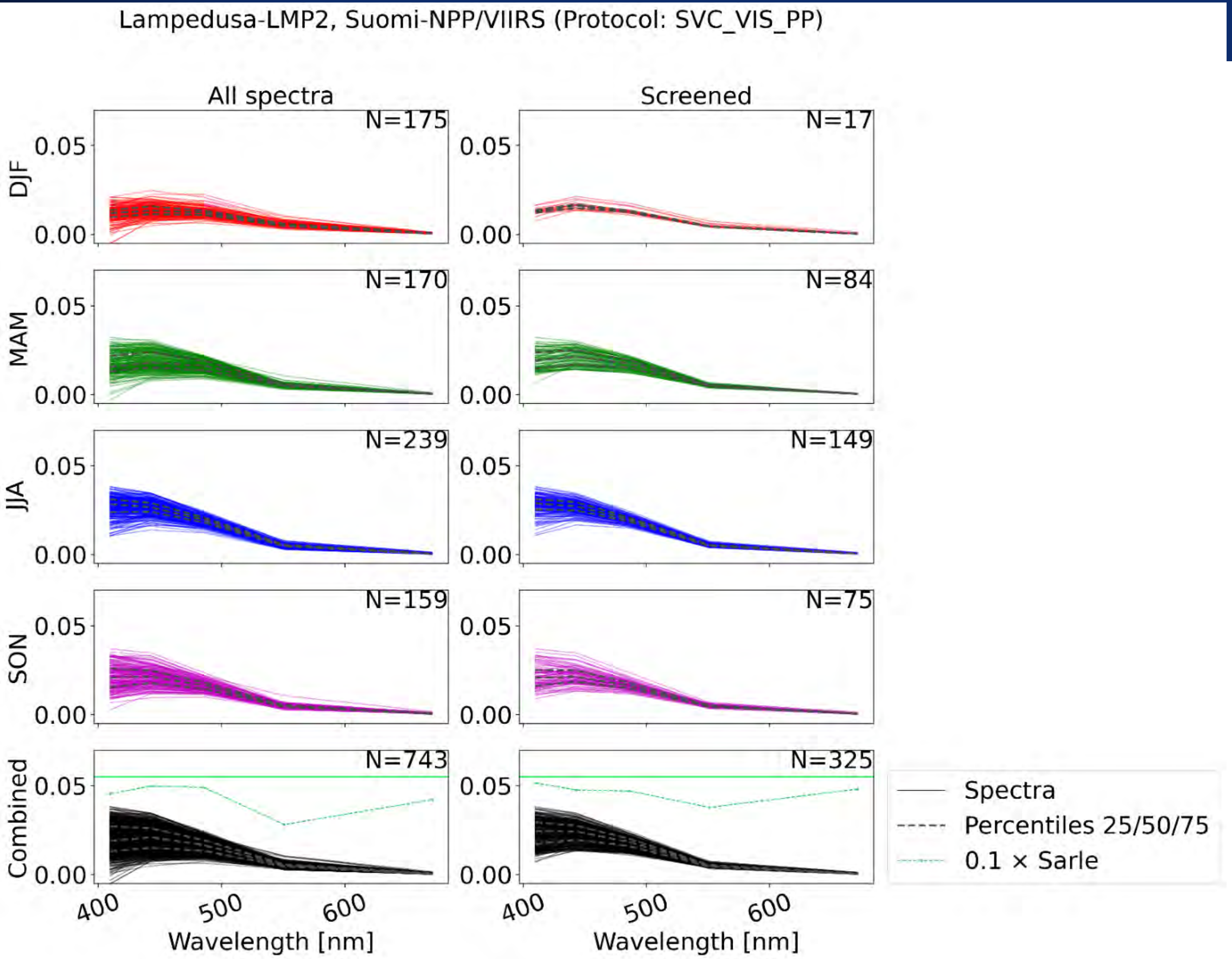
Seasons



EUMETSAT

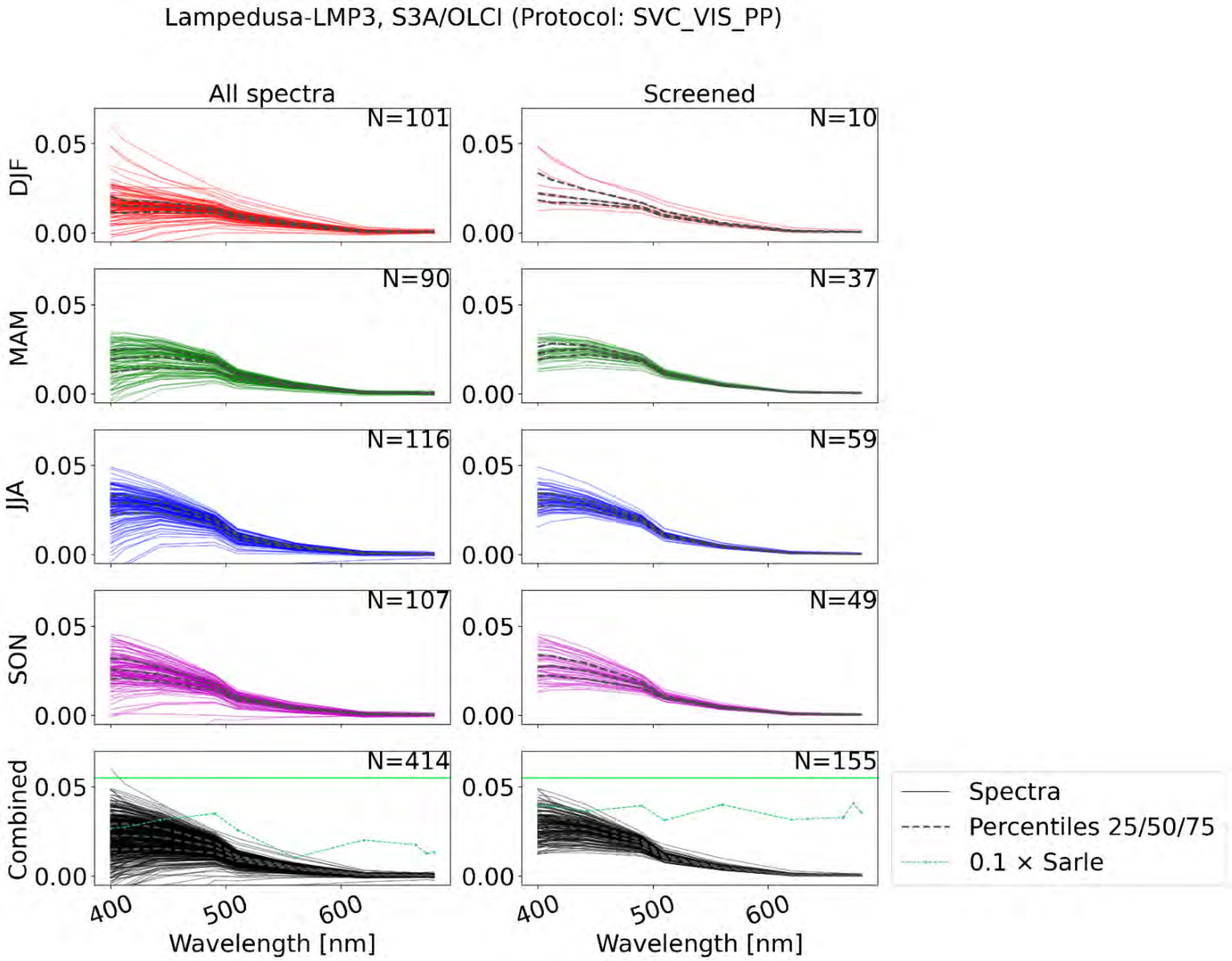
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

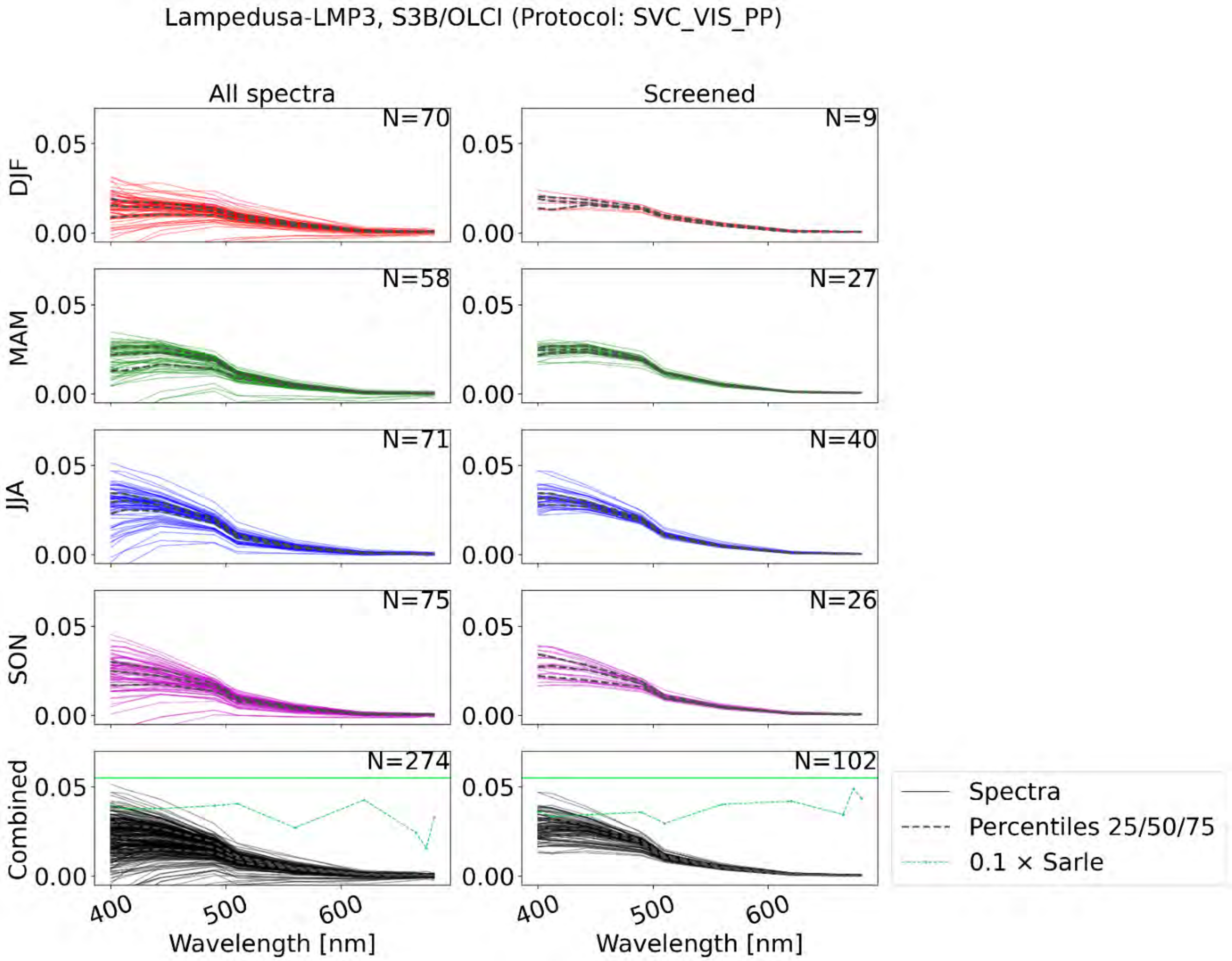
Seasons



EUMETSAT

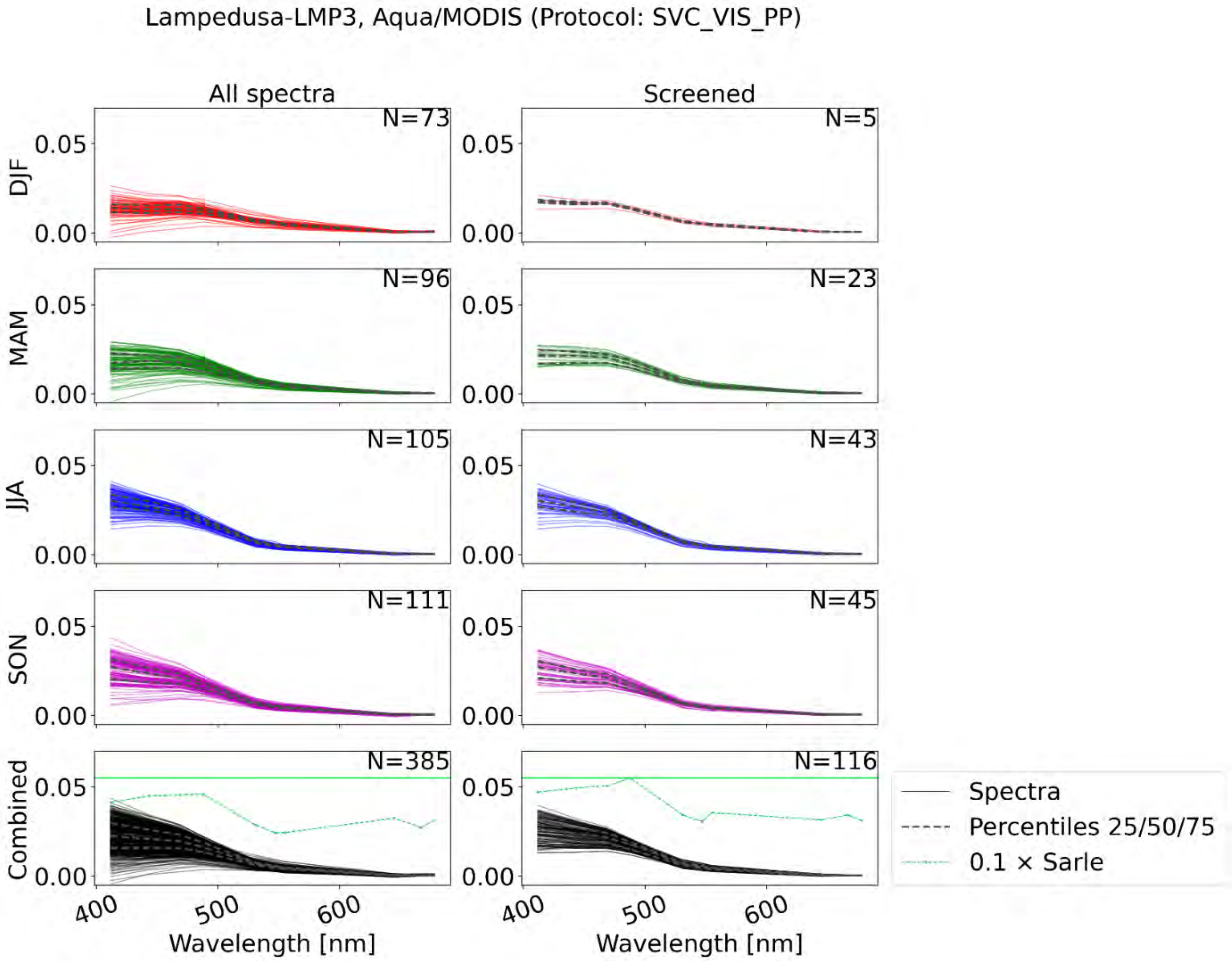
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

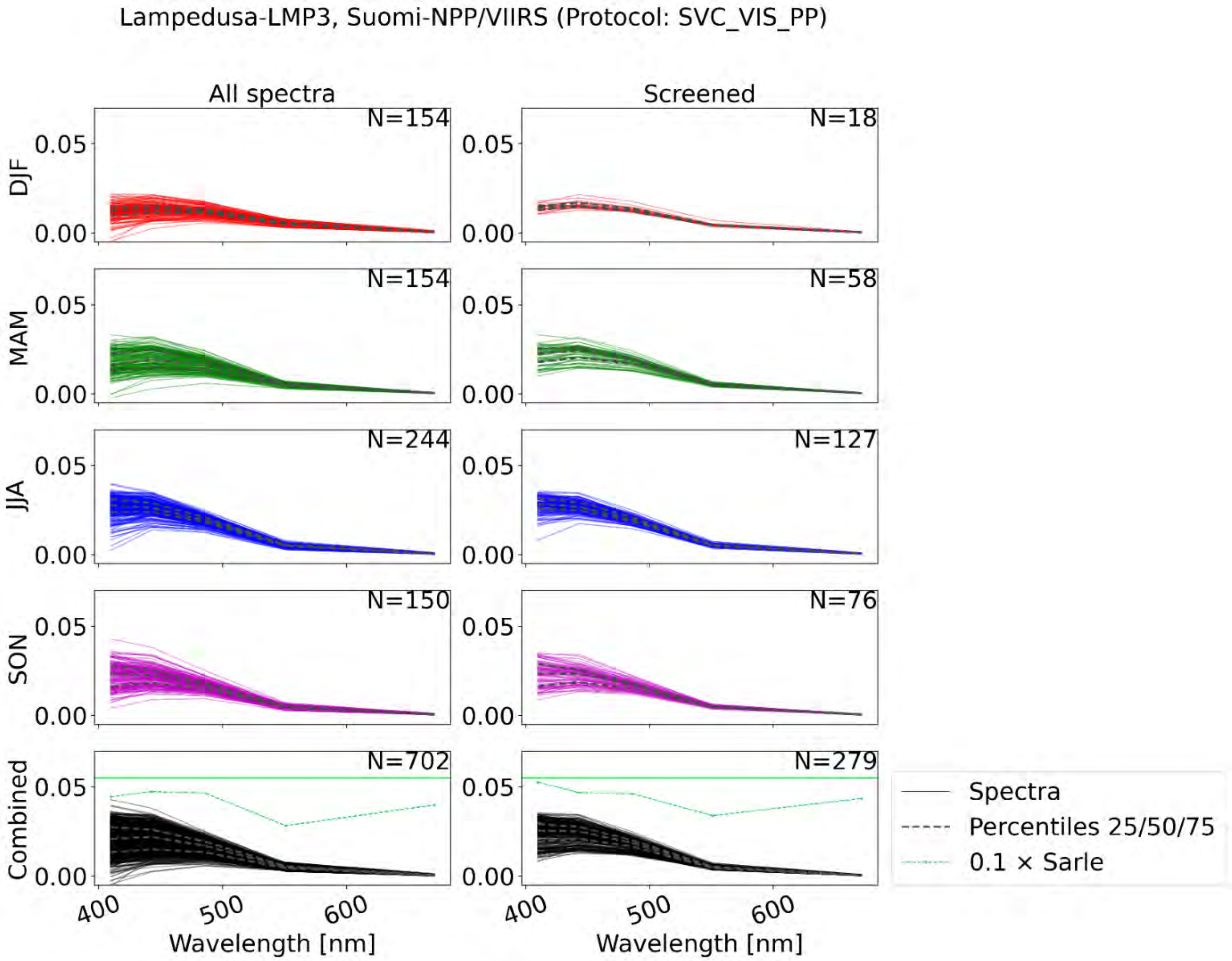
Seasons



EUMETSAT

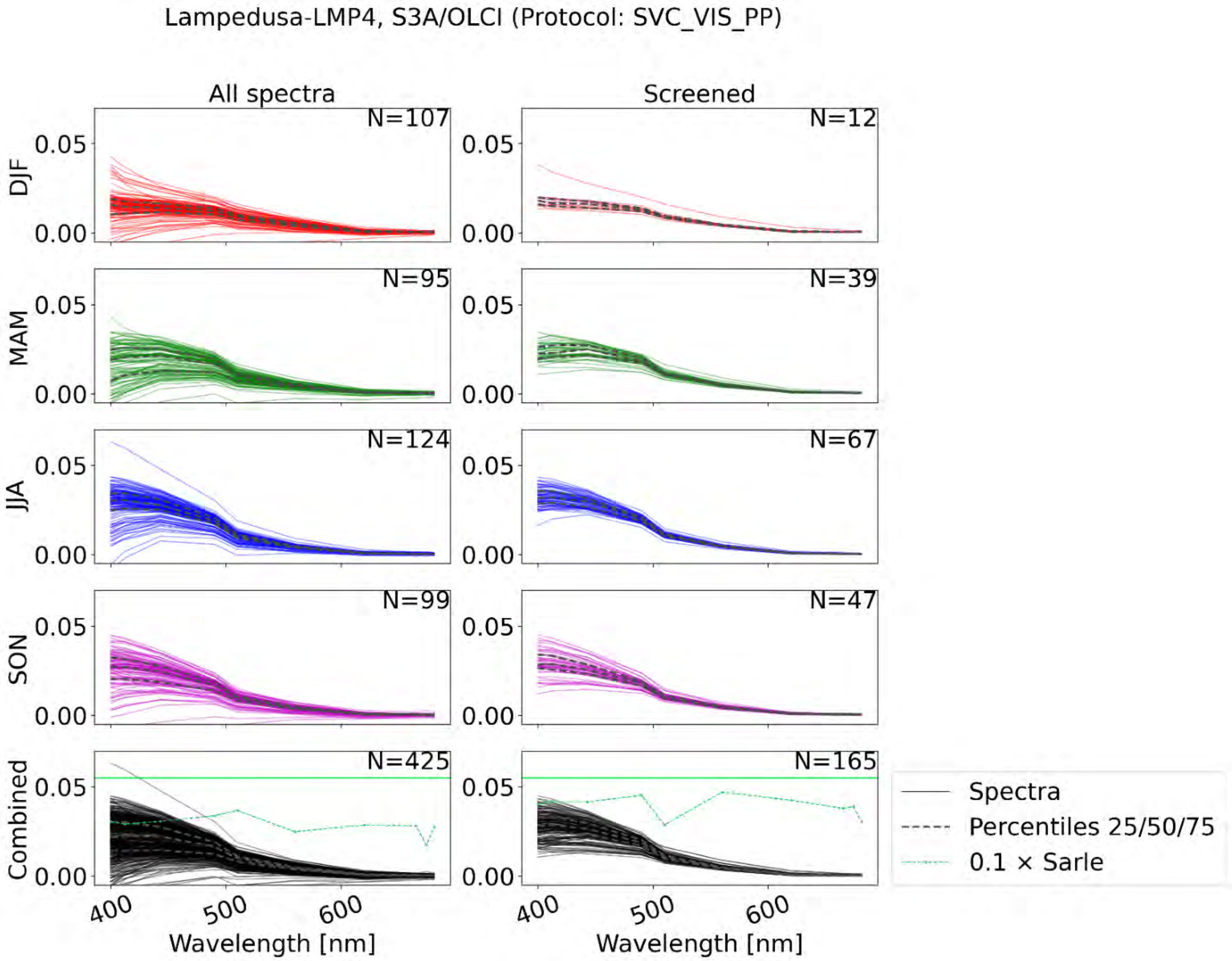
Spectra (all and screened according to SVC_VIS_PP)

Seasons



EUMETSAT

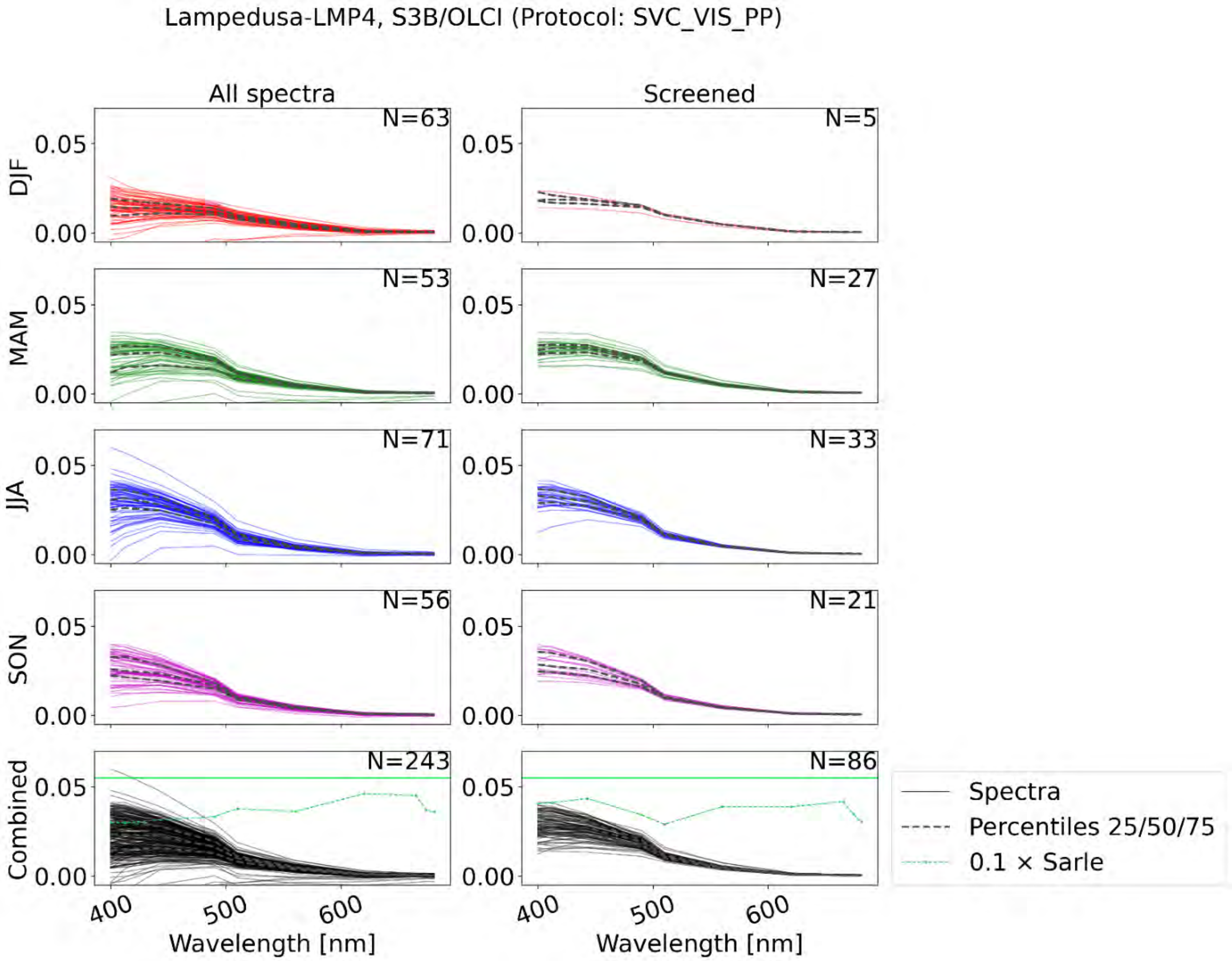
Spectra (all and screened according to SVC_VIS_PP)



Seasons

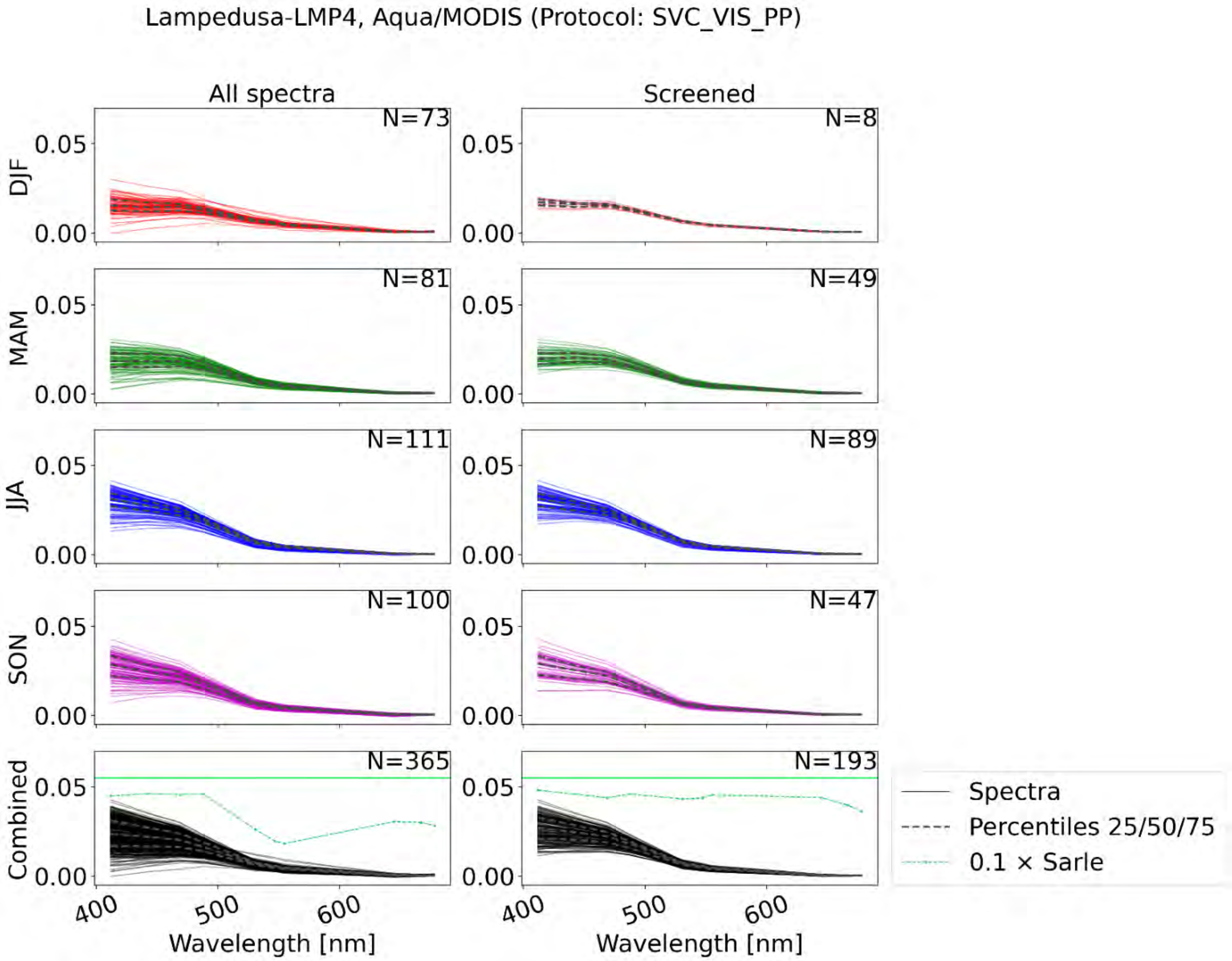
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

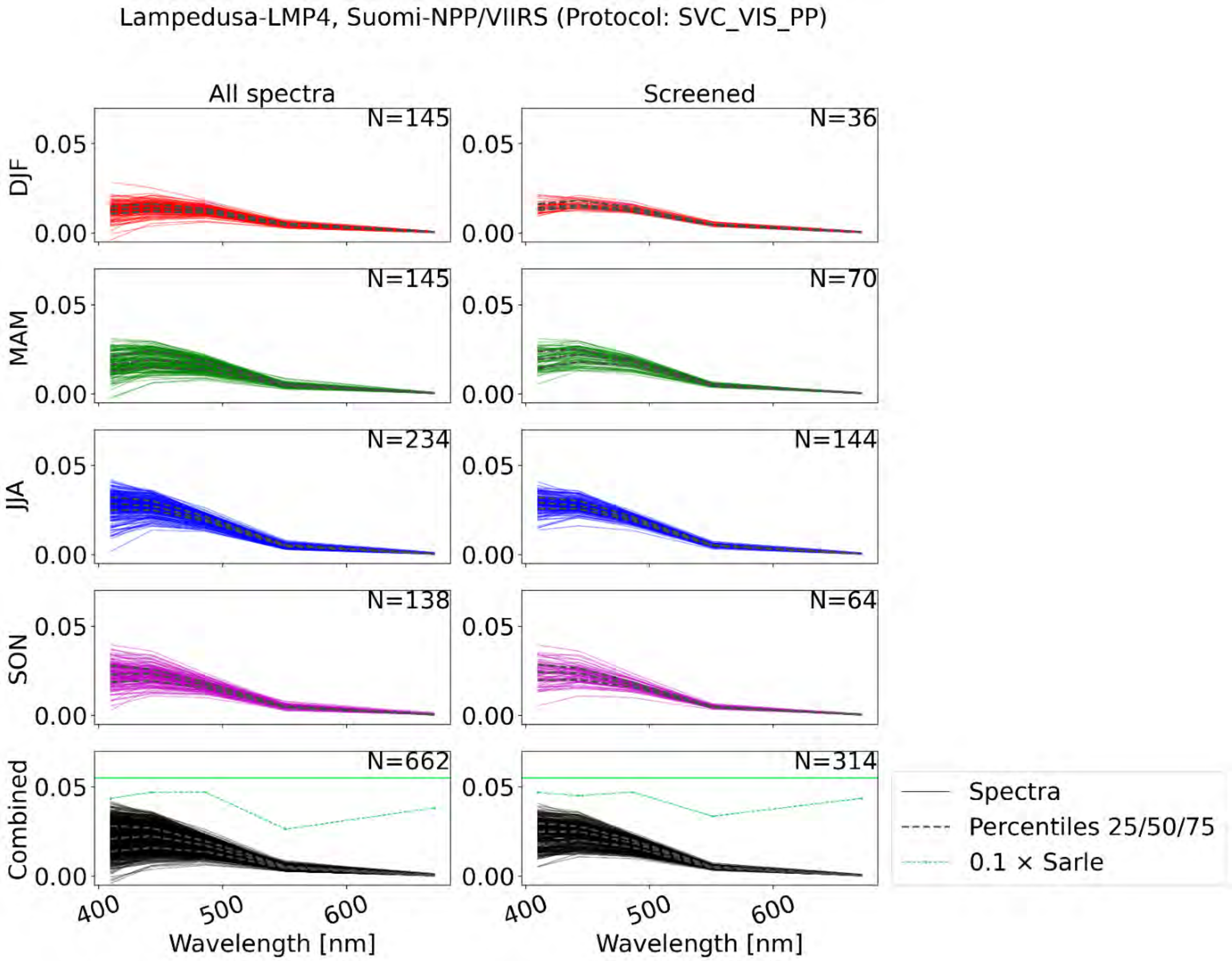
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

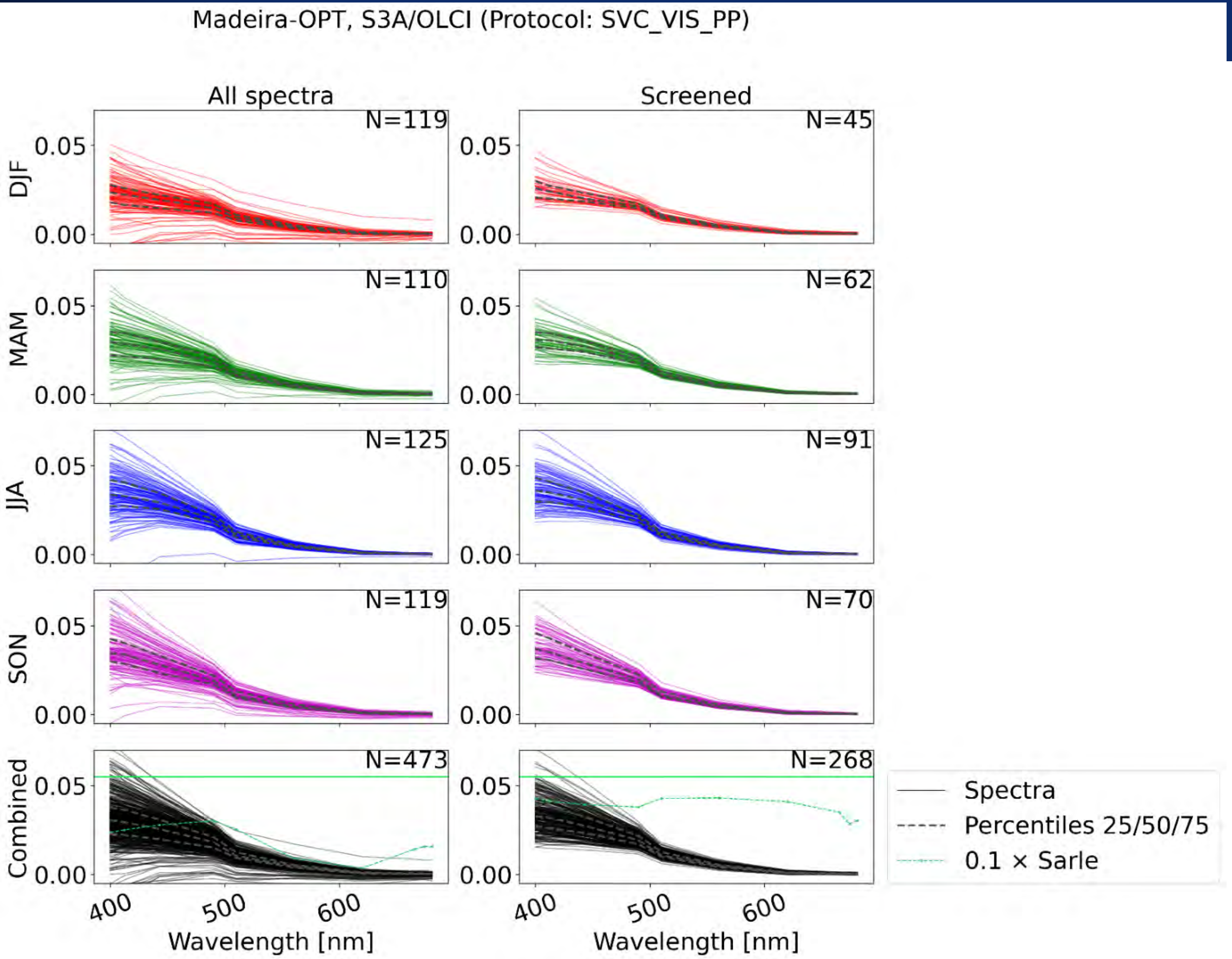
Seasons



EUMETSAT

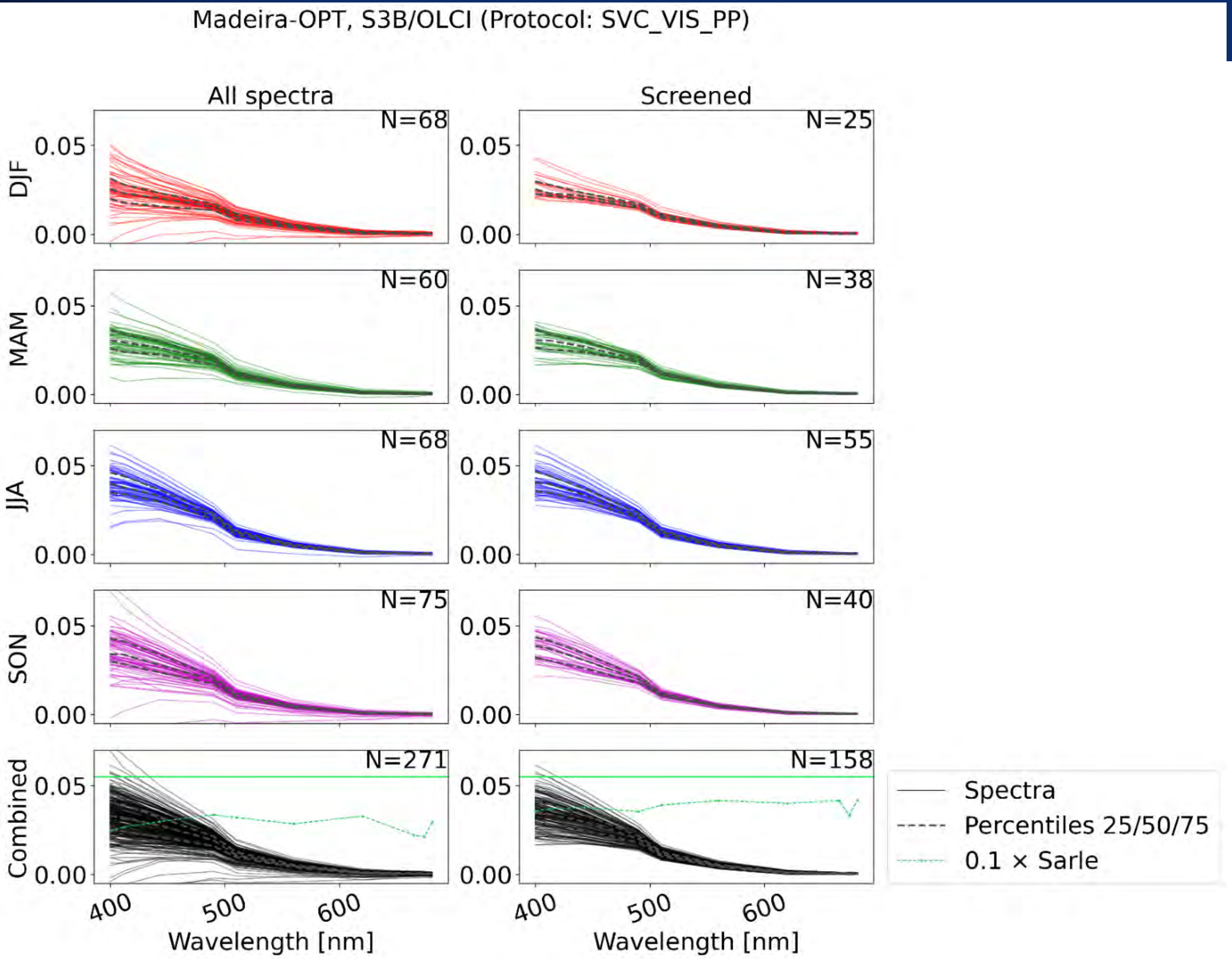
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

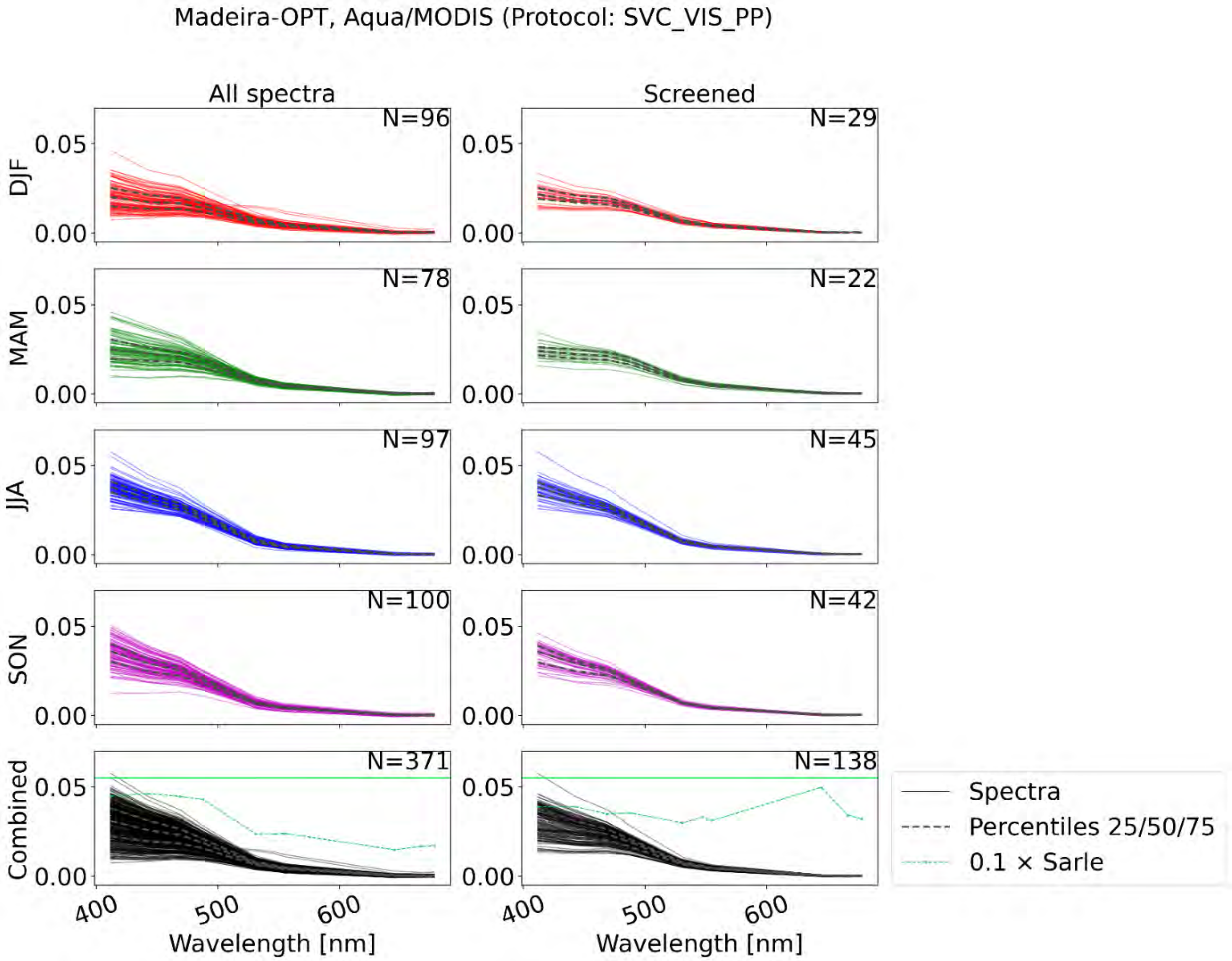
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

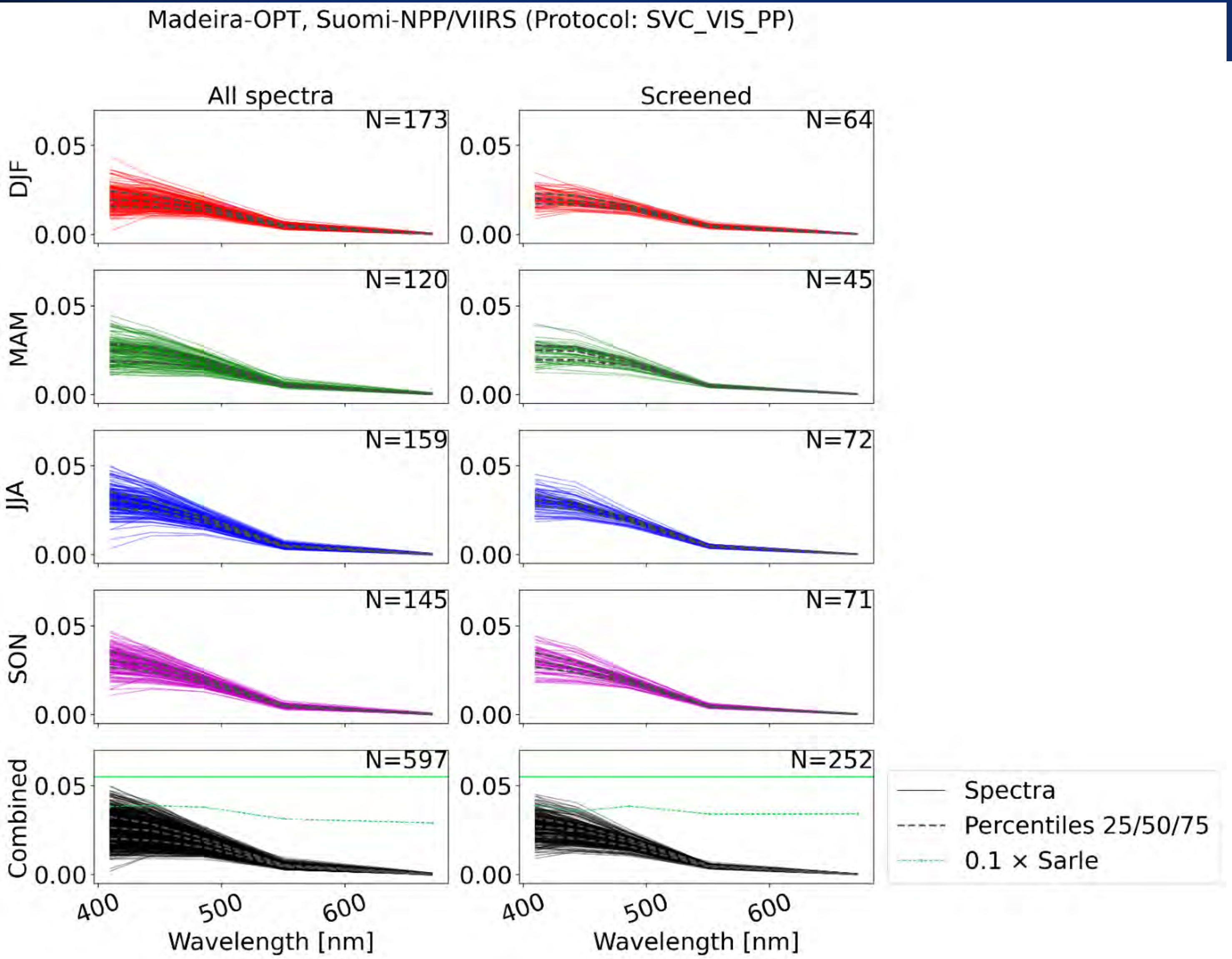
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

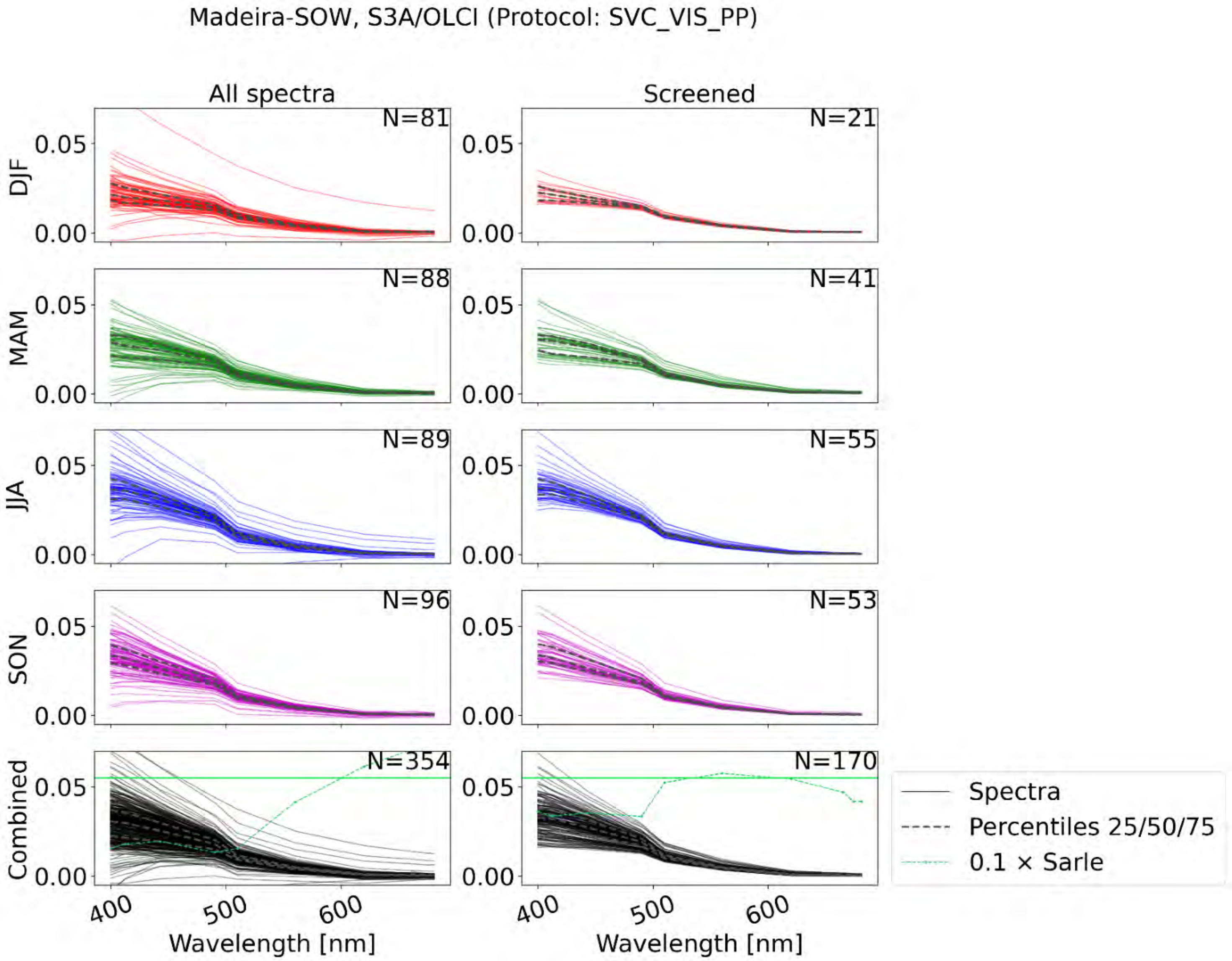
Seasons



EUMETSAT

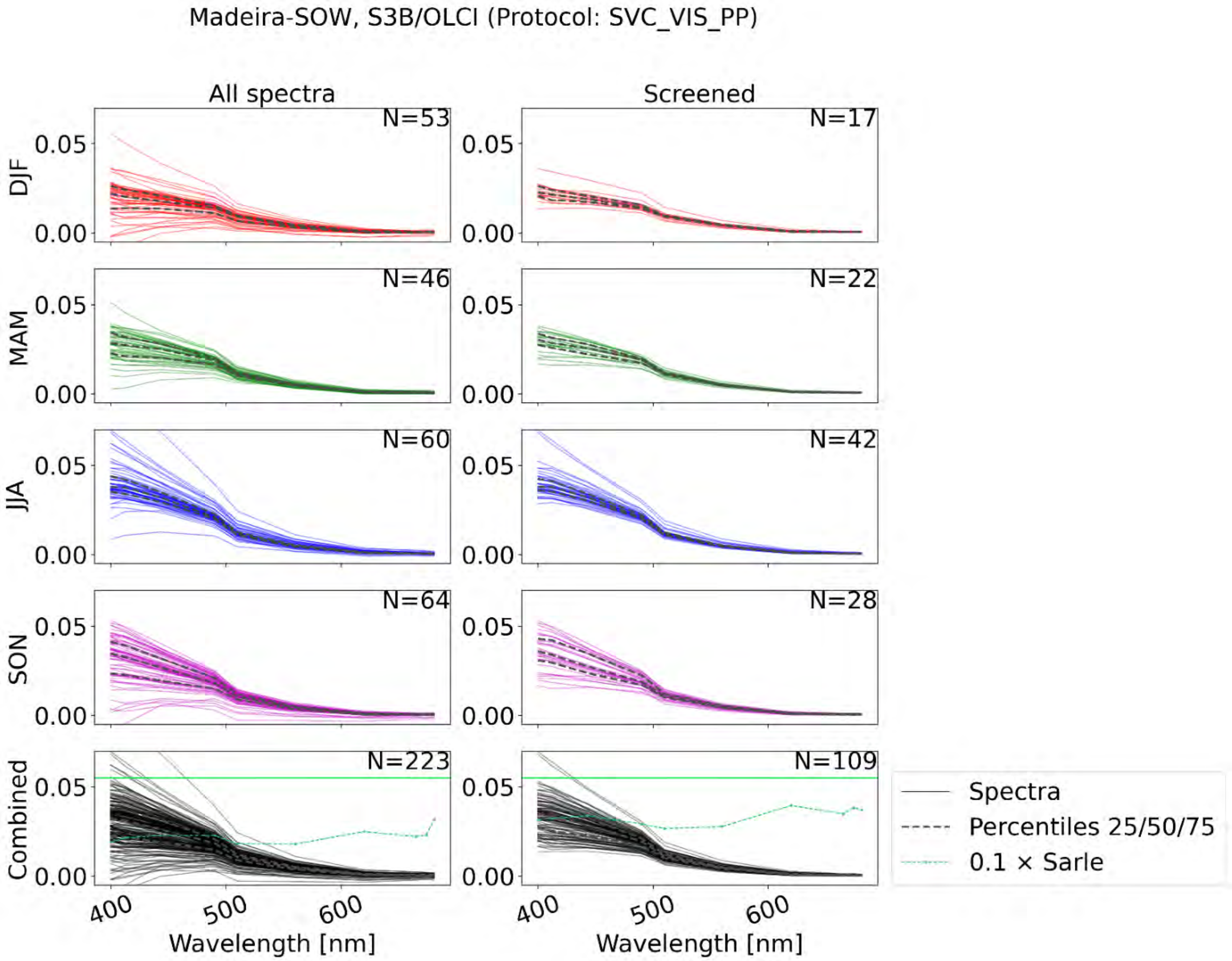
Spectra (all and screened according to SVC_VIS_PP)

Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

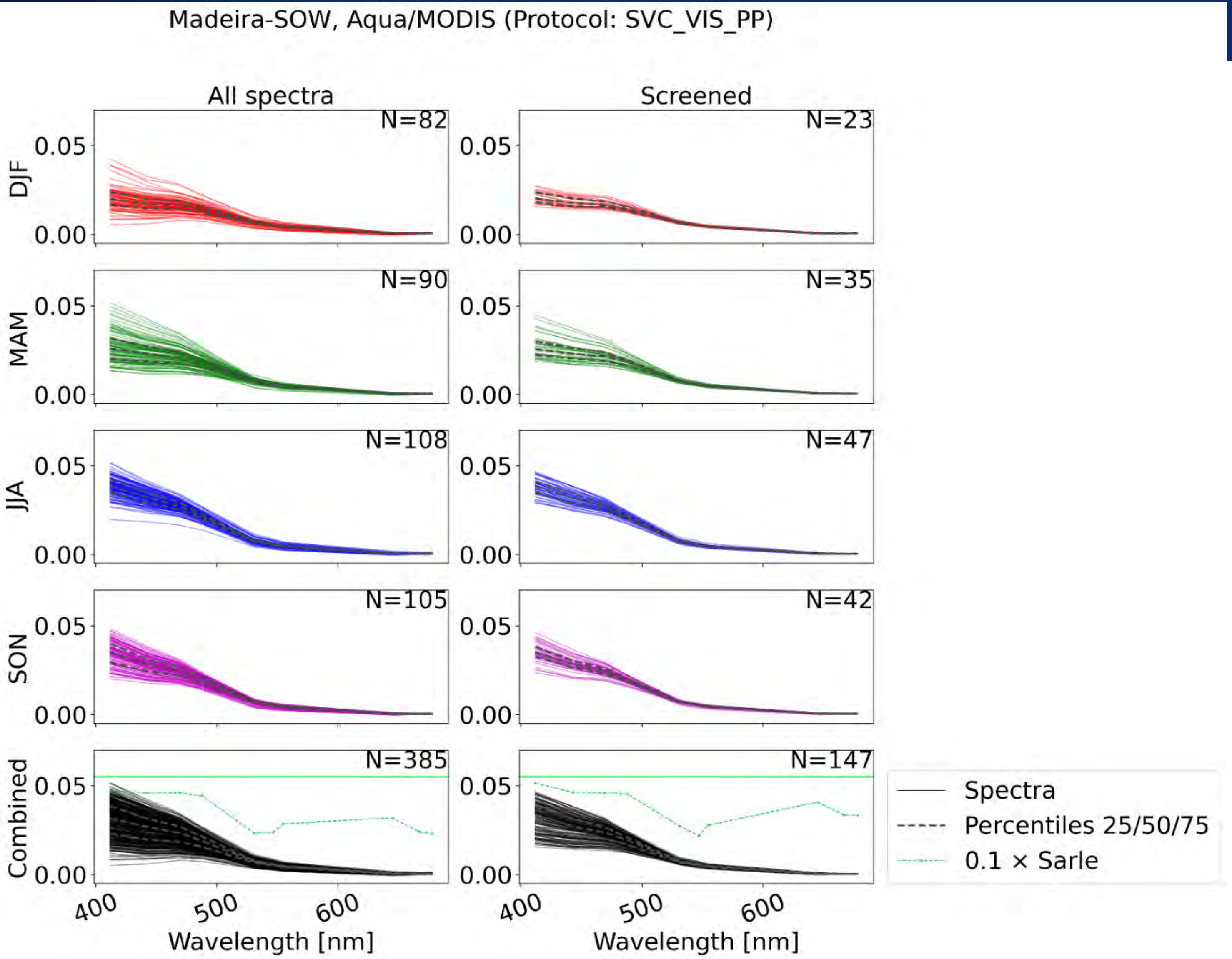


Seasons

EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

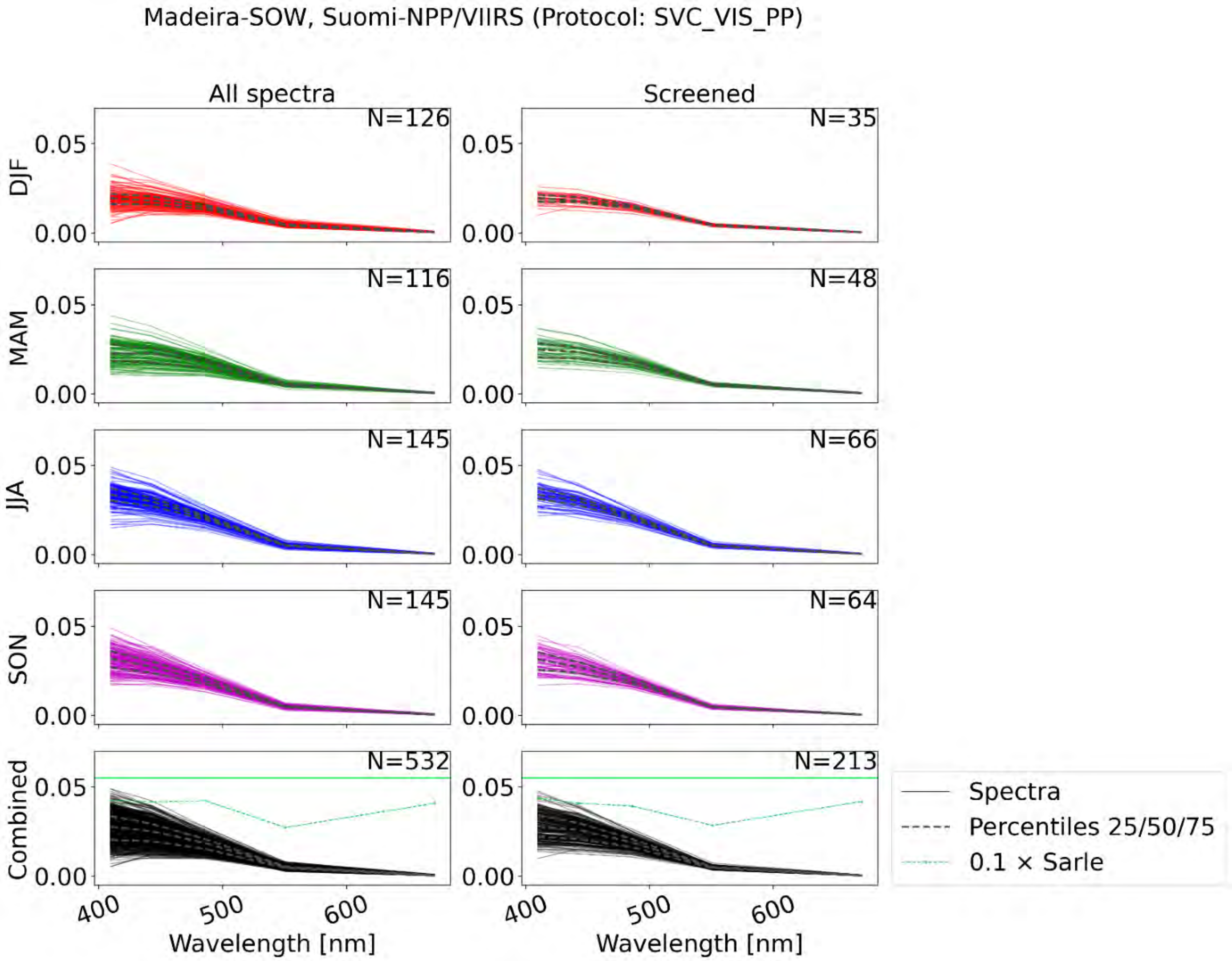
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

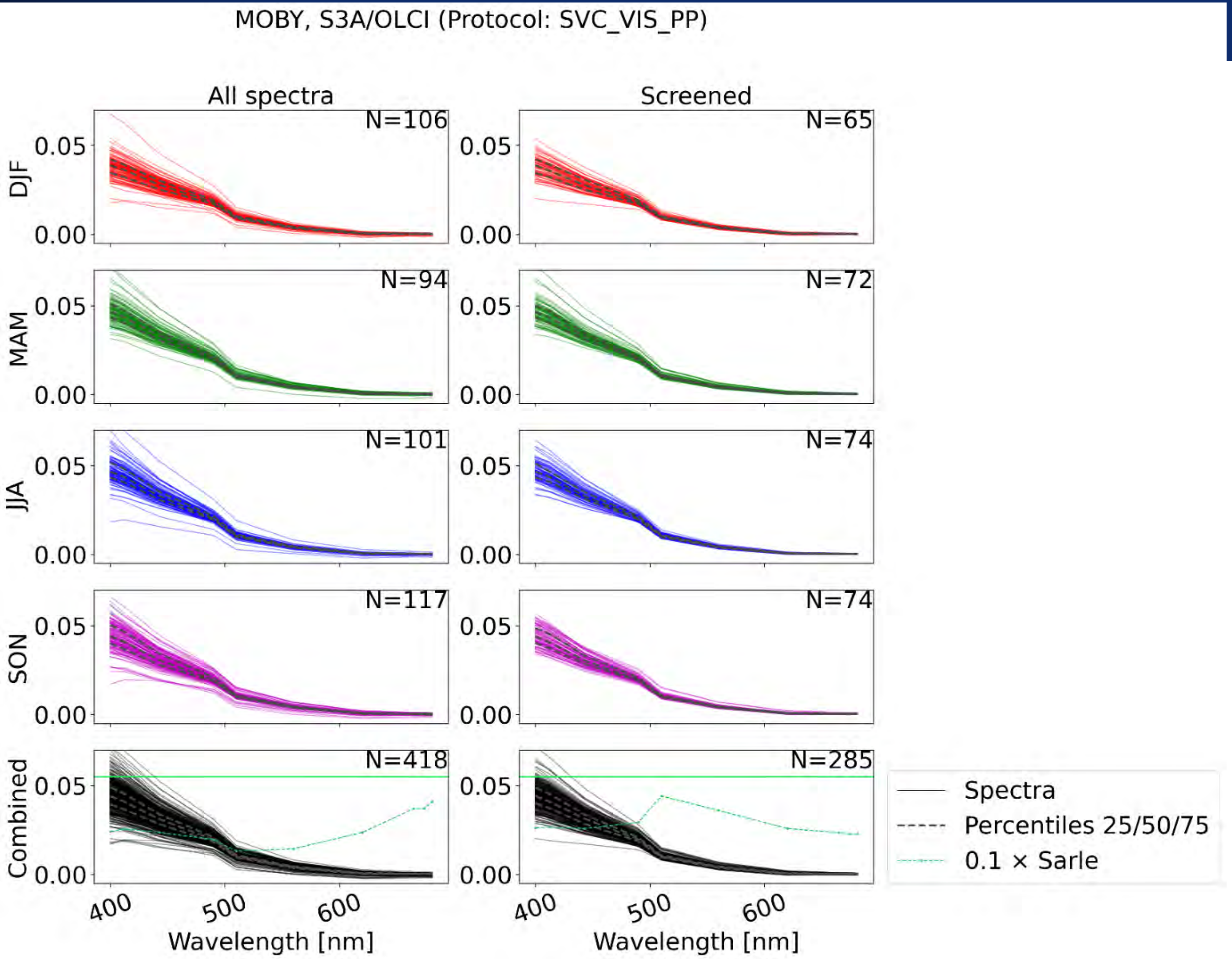
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

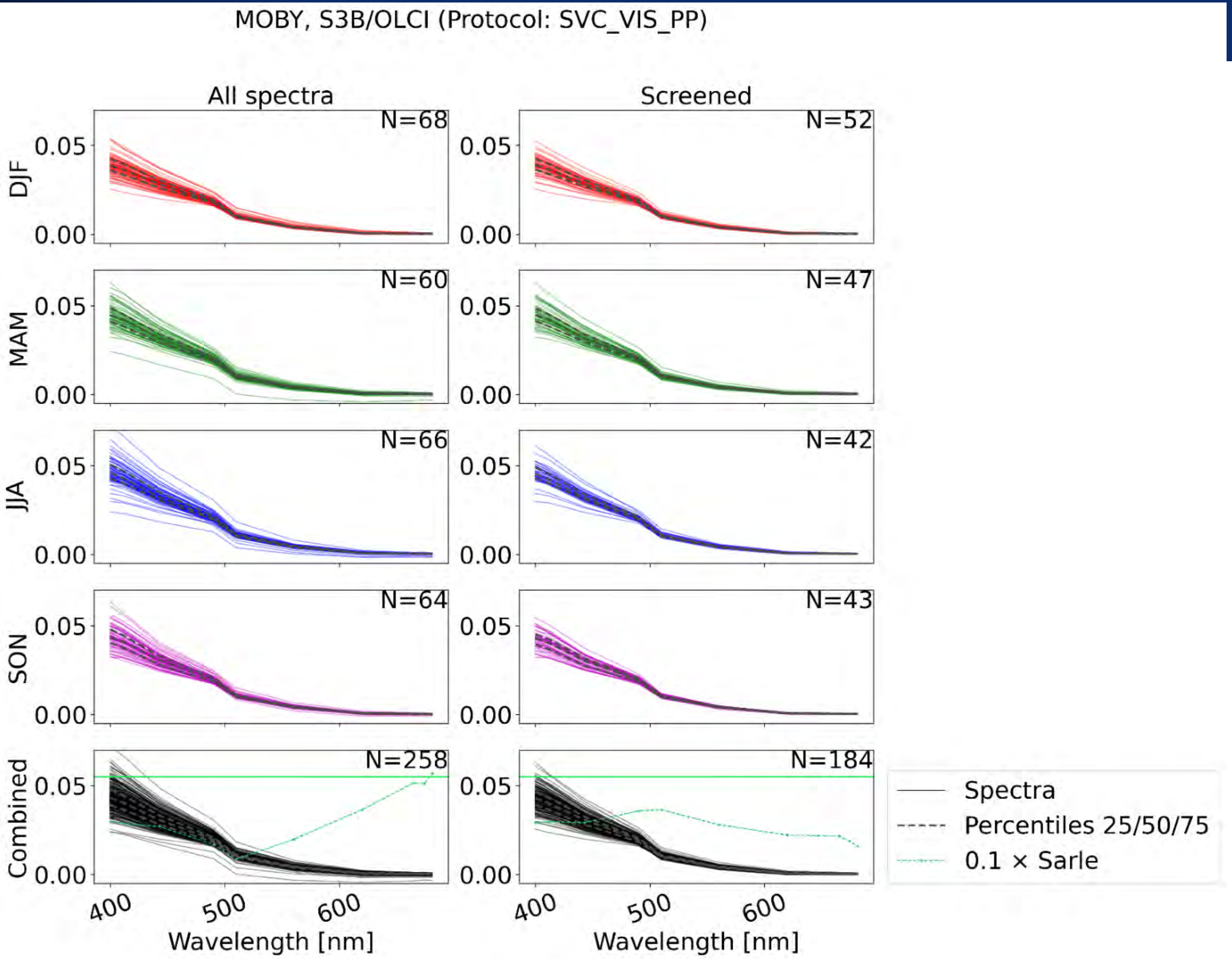
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

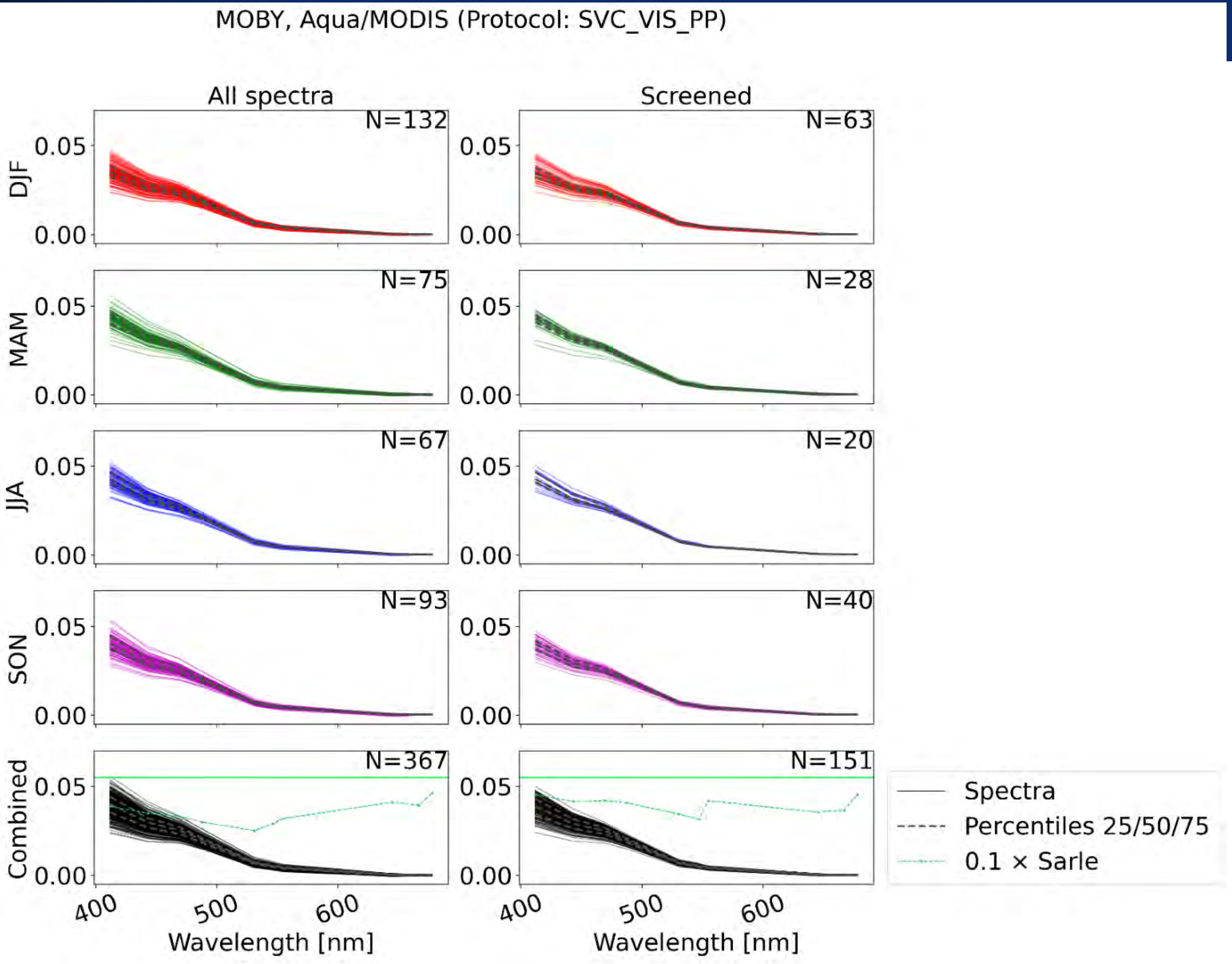
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

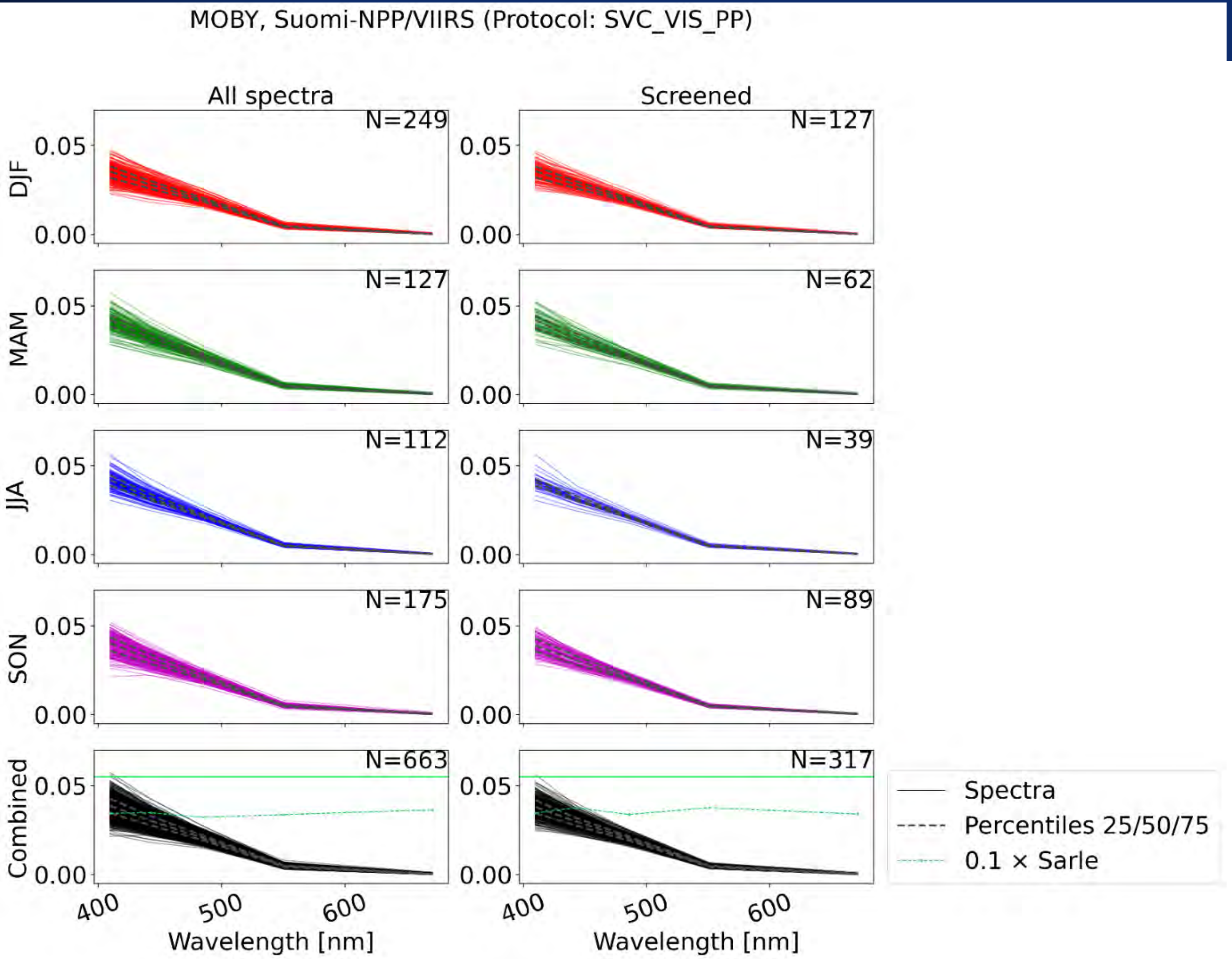
Seasons



EUMETSAT

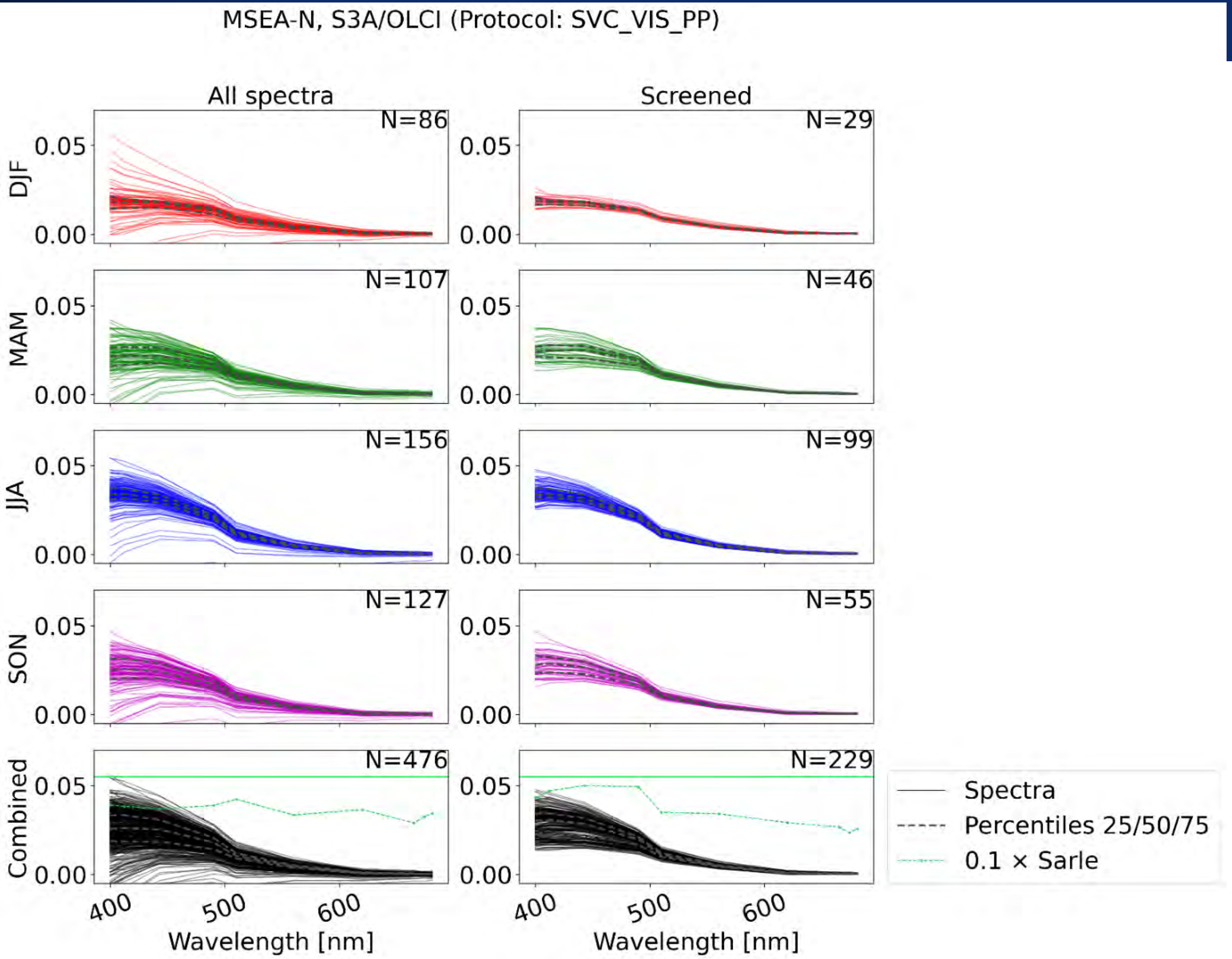
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

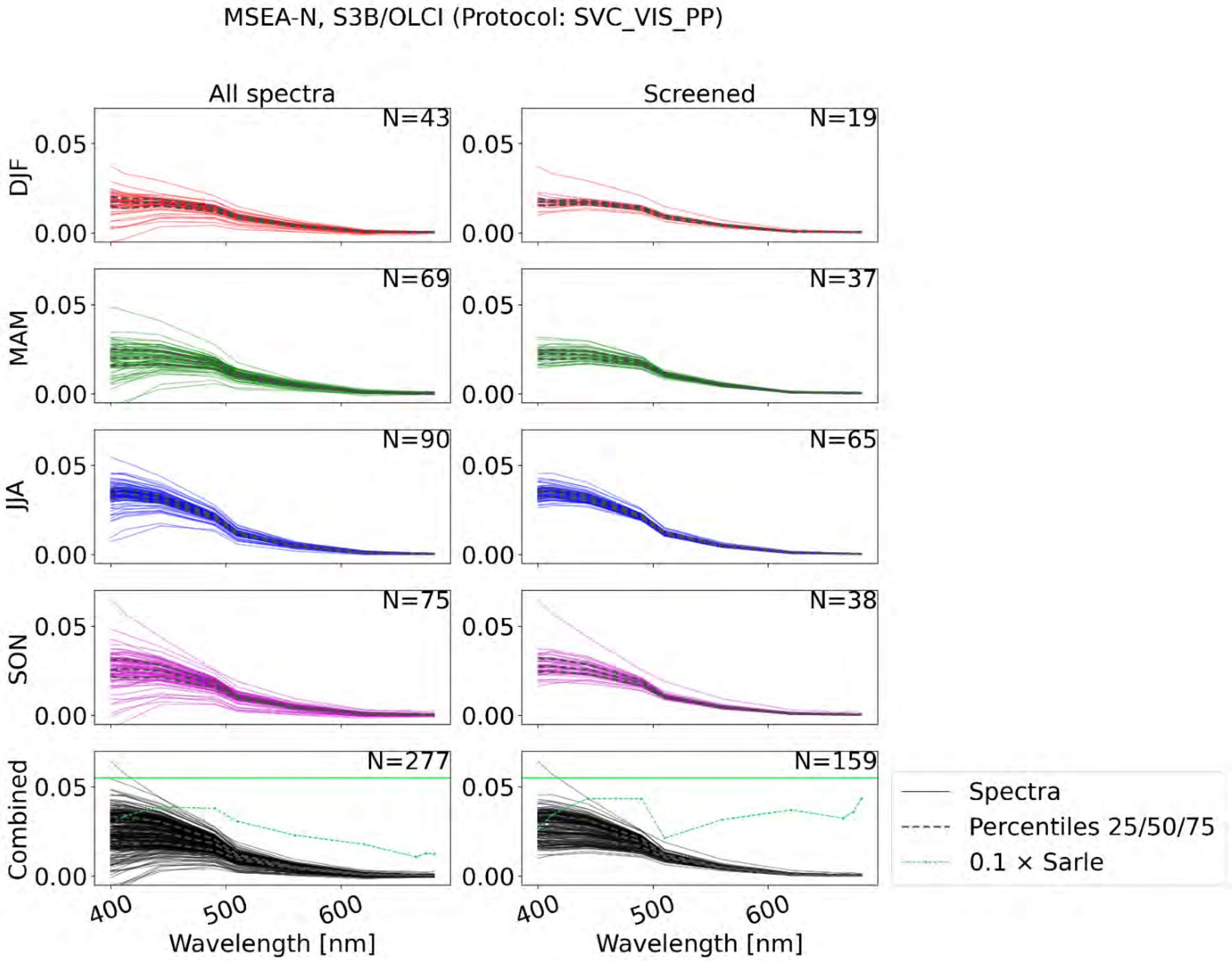
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

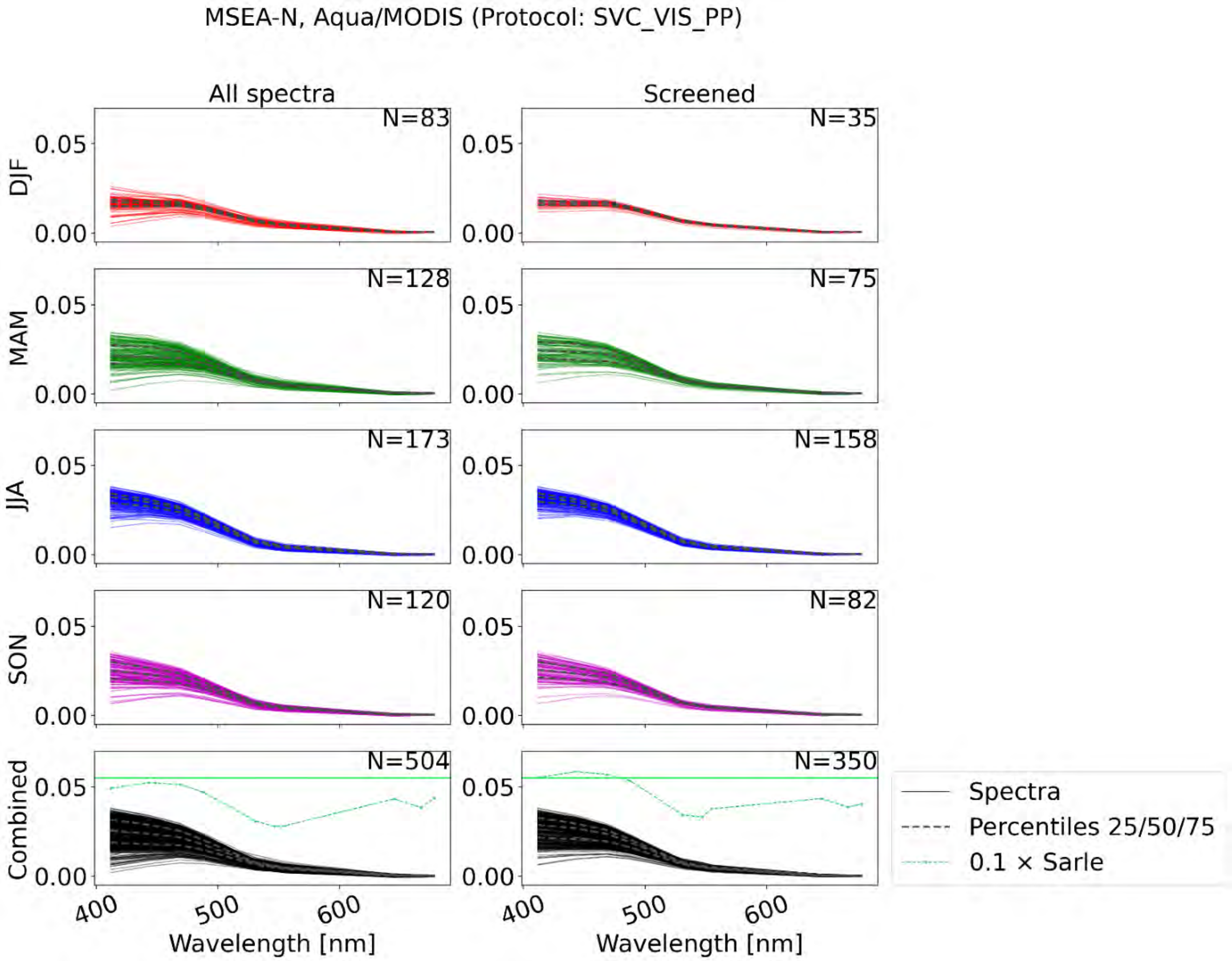
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

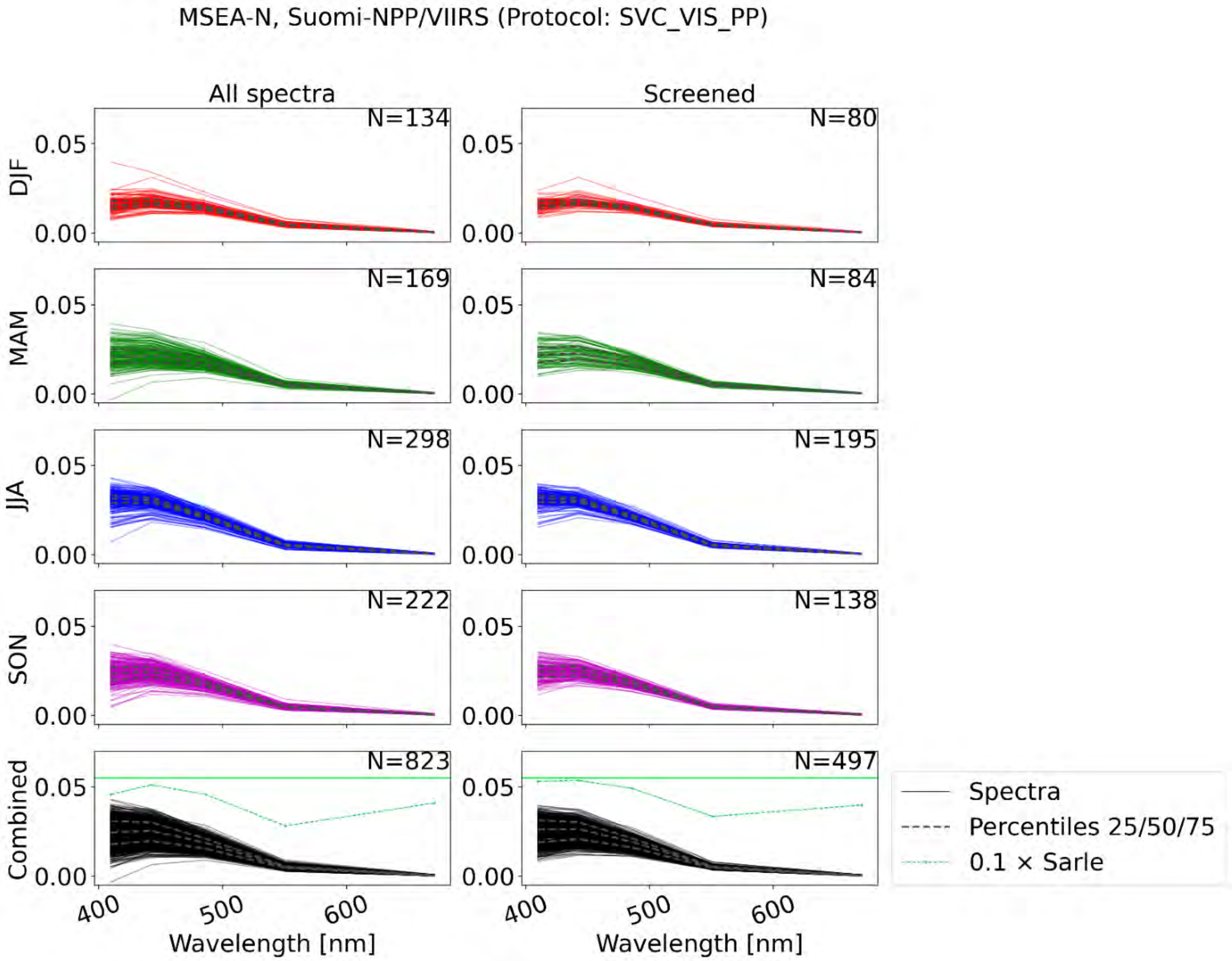
Seasons



EUMETSAT

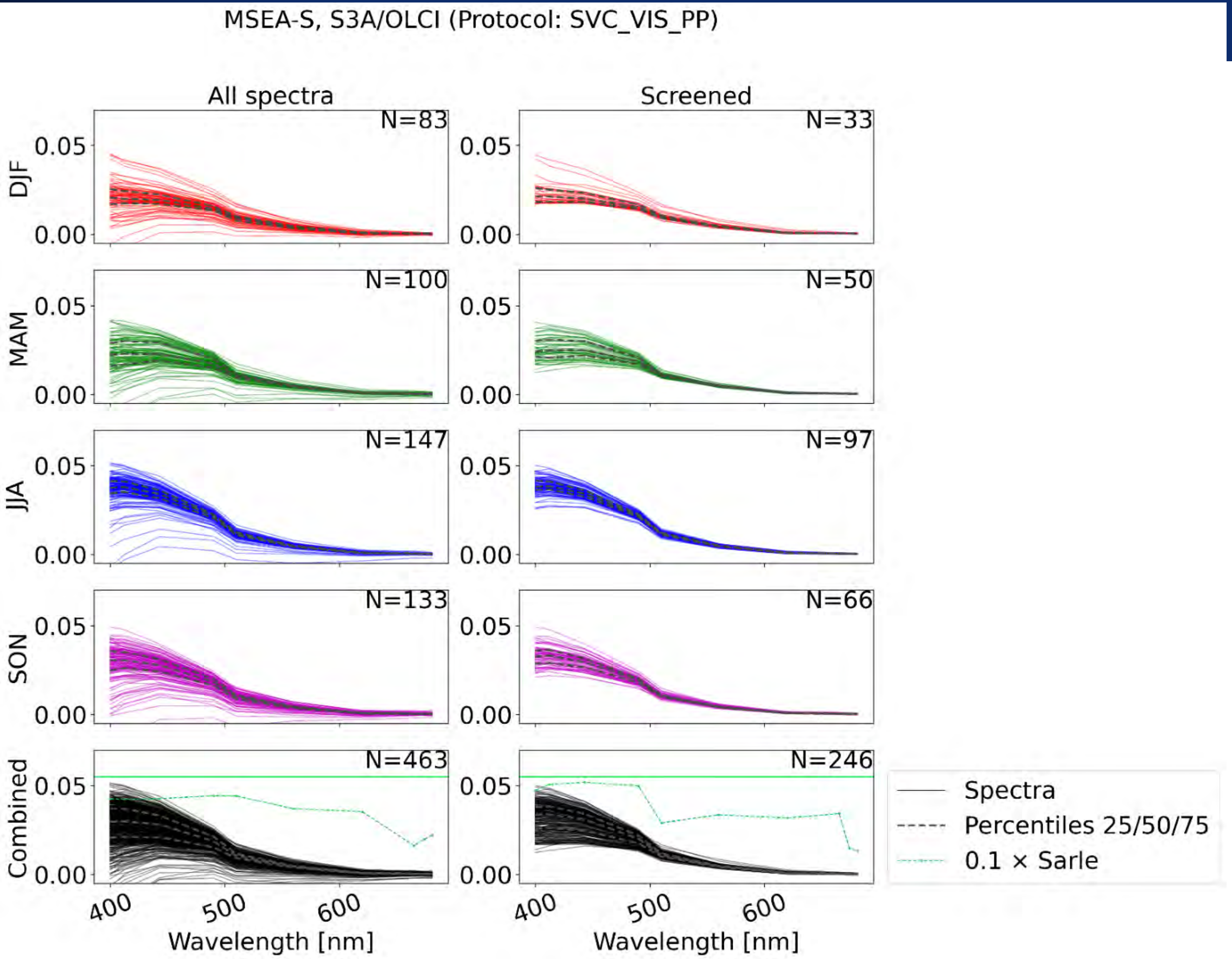
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

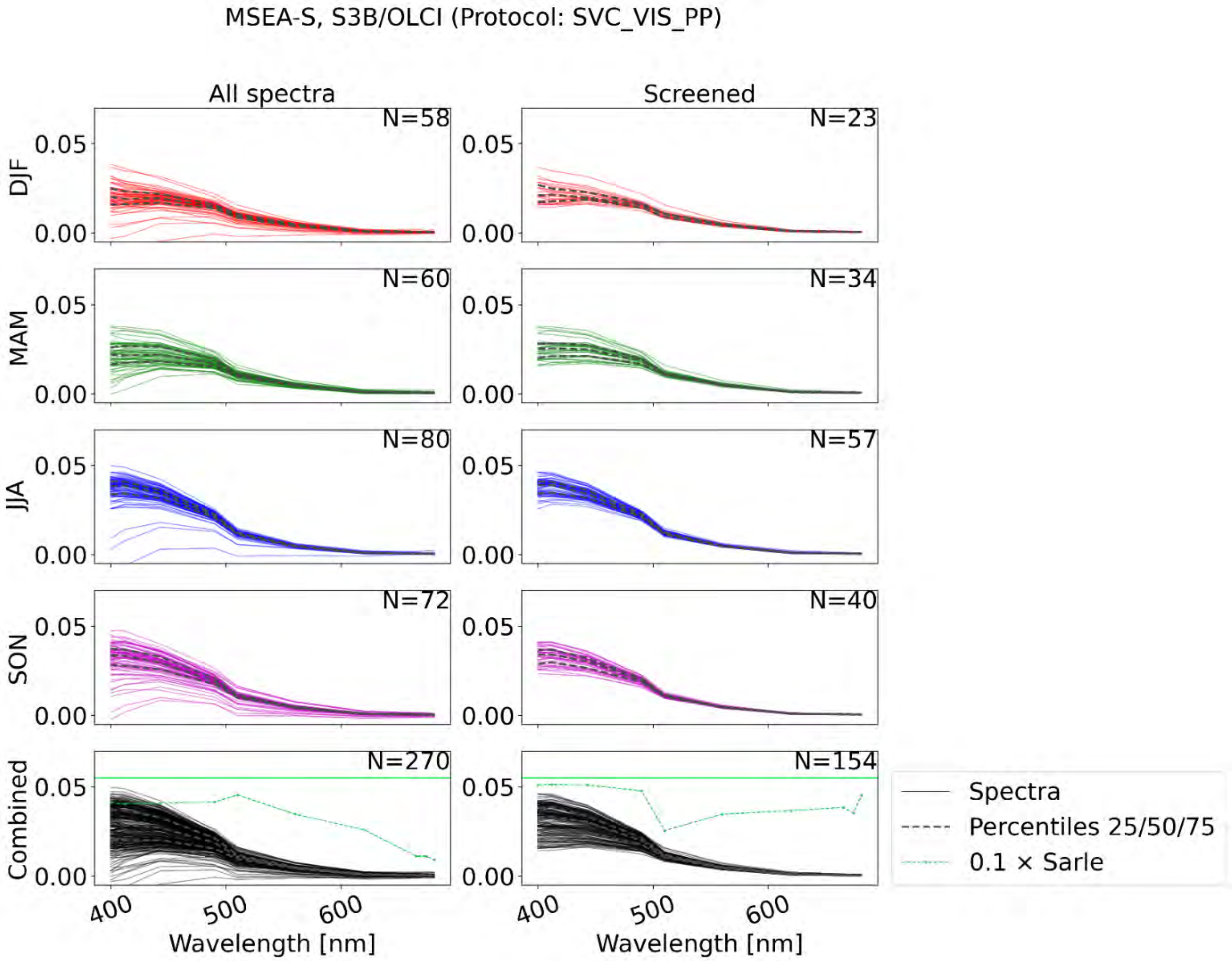
Seasons



EUMETSAT

Spectra (all and screened according to SVC_VIS_PP)

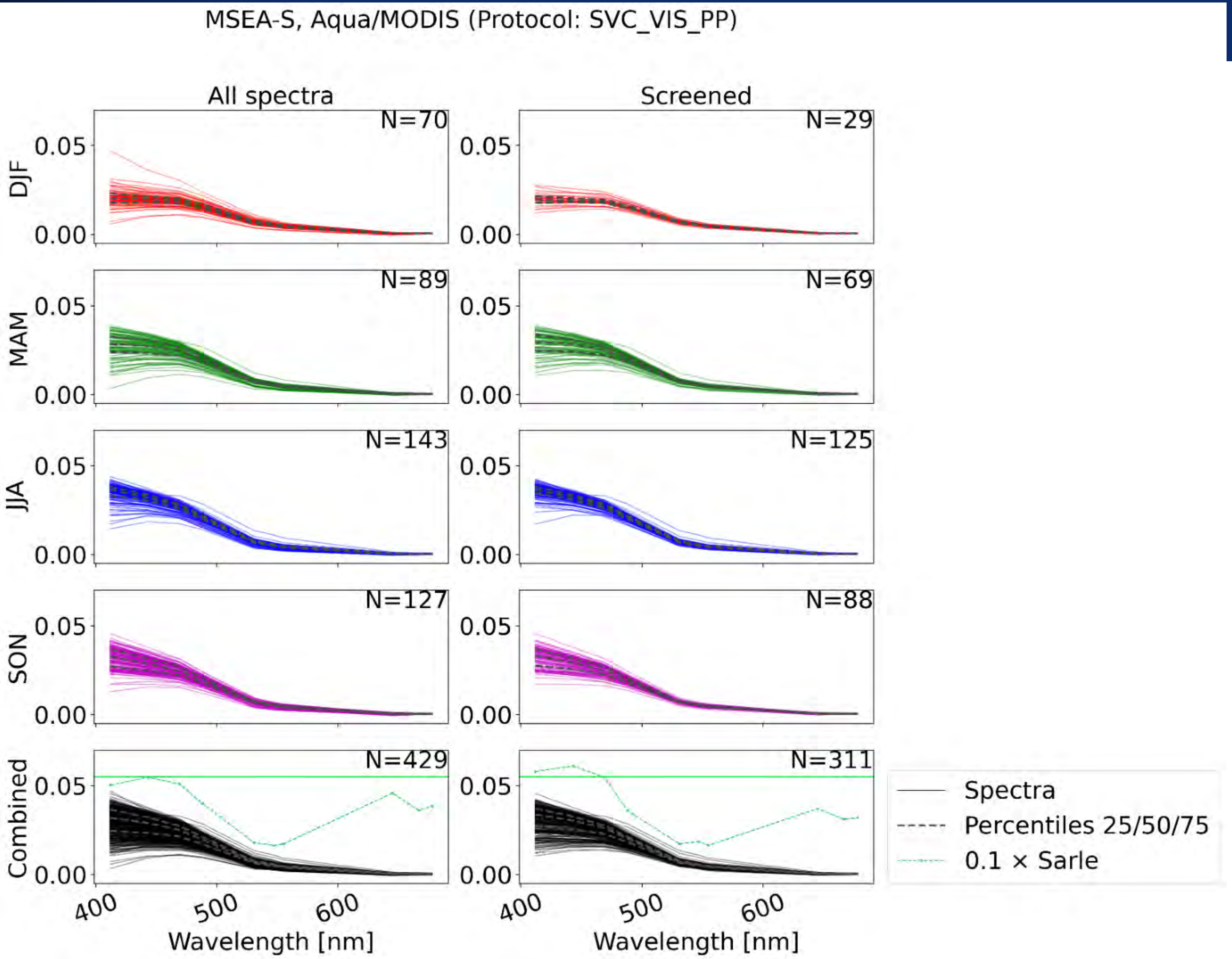
Seasons



EUMETSAT

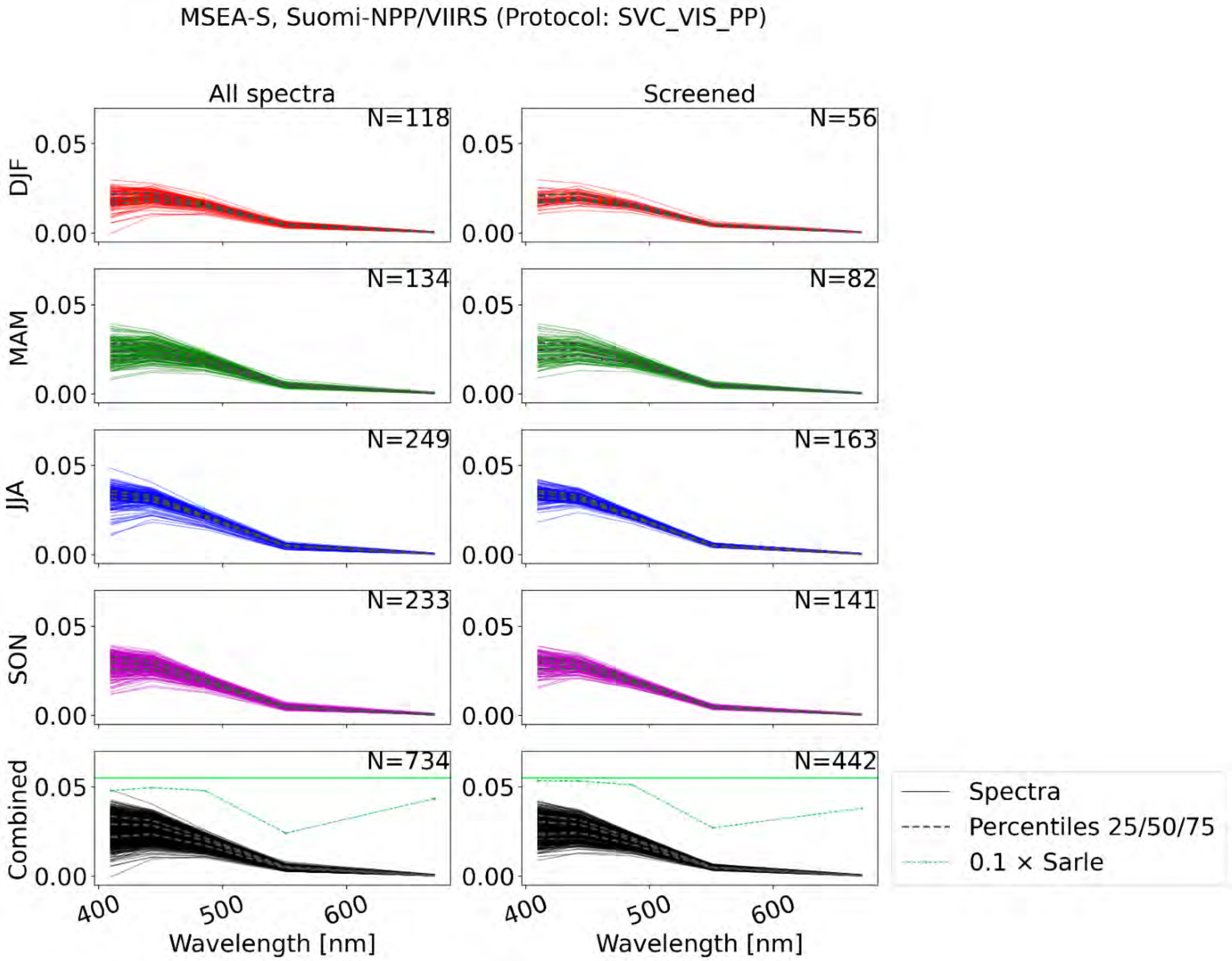
Spectra (all and screened according to SVC_VIS_PP)

Seasons



Spectra (all and screened according to SVC_VIS_PP)

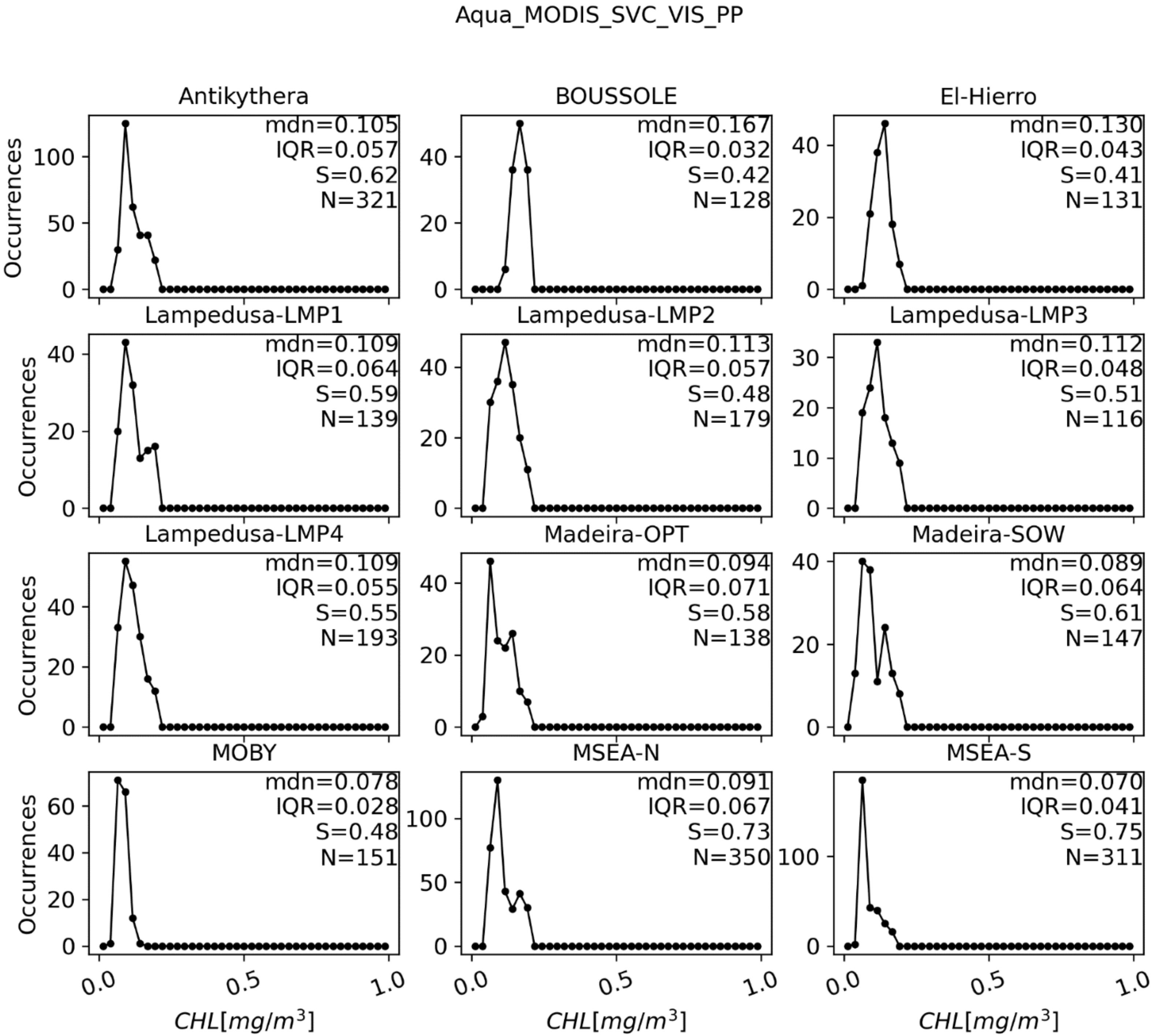
Seasons



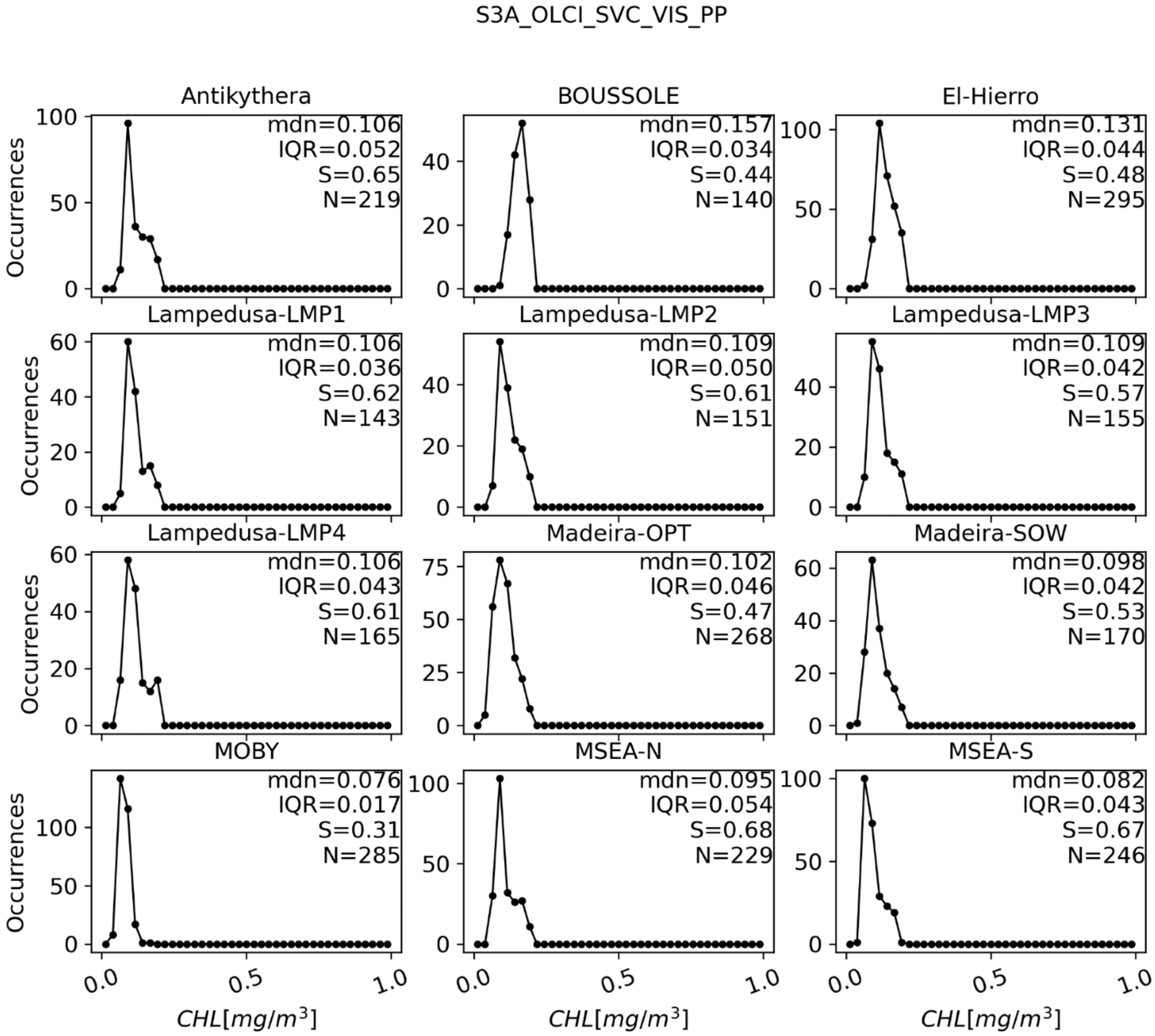
EUMETSAT

Histograms/spectra screened

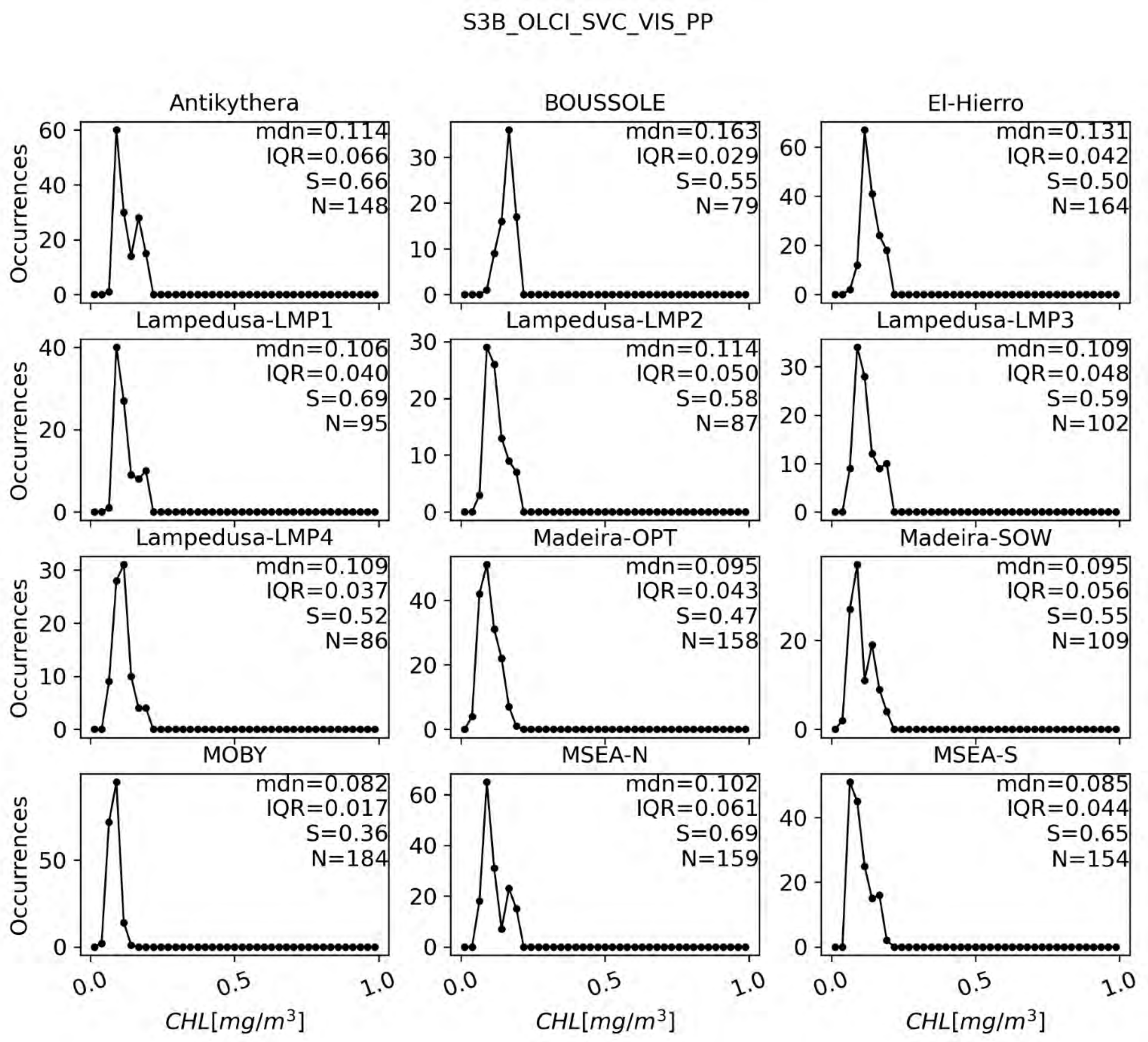
SVC_VIS_PP

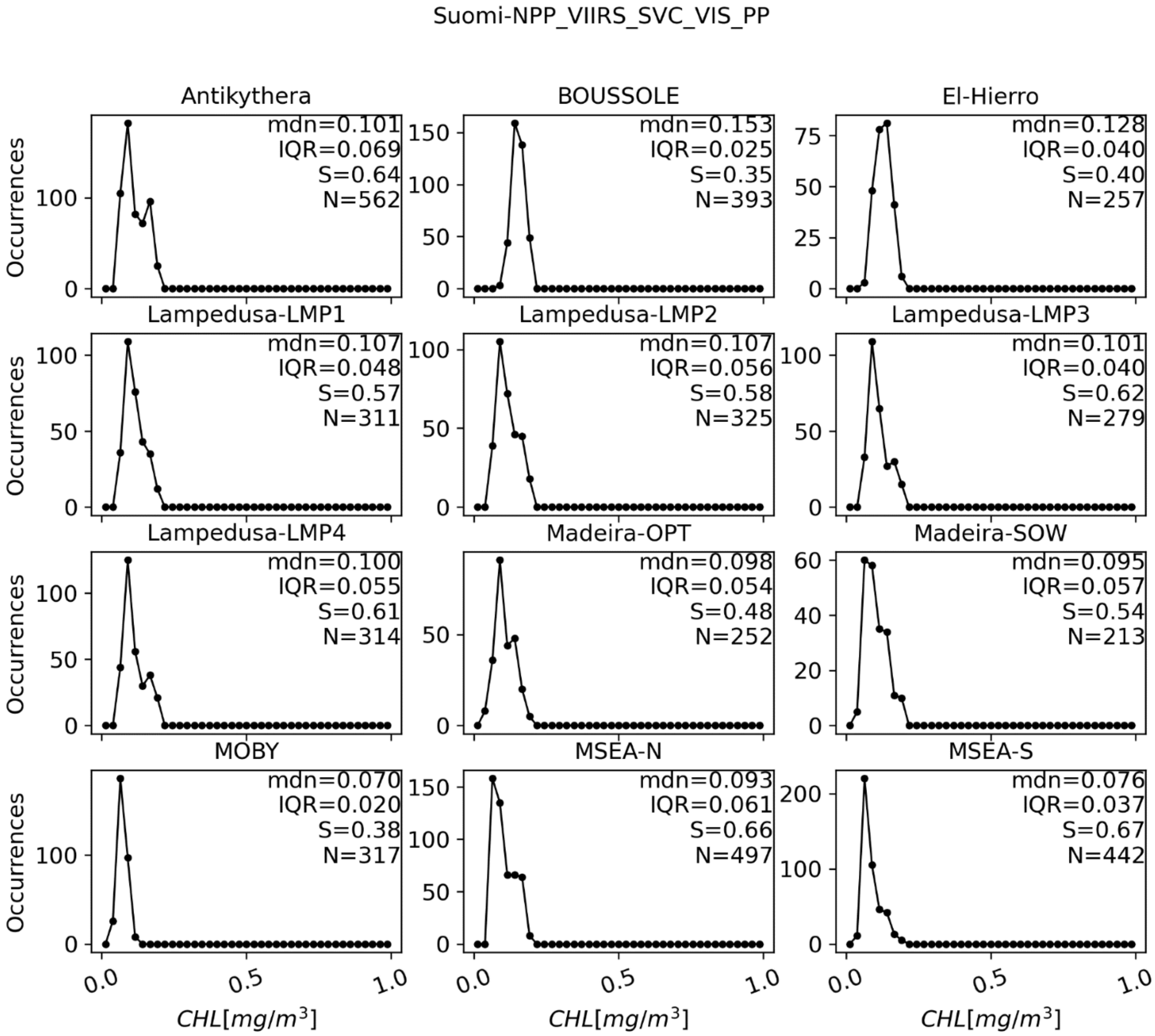

Aqua_MODIS_SVC_VIS_PP
Antikythera
mdn=0.105
IQR=0.057
S=0.62
N=321
BOUSSOLE
mdn=0.167
IQR=0.032
S=0.42
N=128
El-Hierro
mdn=0.130
IQR=0.043
S=0.41
N=131
Lampedusa-LMP1
mdn=0.109
IQR=0.064
S=0.59
N=139
Lampedusa-LMP2
mdn=0.113
IQR=0.057
S=0.48
N=179
Lampedusa-LMP3
mdn=0.112
IQR=0.048
S=0.51
N=116
Lampedusa-LMP4
mdn=0.109
IQR=0.055
S=0.55
N=193
Madeira-OPT
mdn=0.094
IQR=0.071
S=0.58
N=138
Madeira-SOW
mdn=0.089
IQR=0.064
S=0.61
N=147
MOBY
mdn=0.078
IQR=0.028
S=0.48
N=151
MSEA-N
mdn=0.091
IQR=0.067
S=0.73
N=350
MSEA-S
mdn=0.070
IQR=0.041
S=0.75
N=311
Occurrences
CHL[mg/m3]

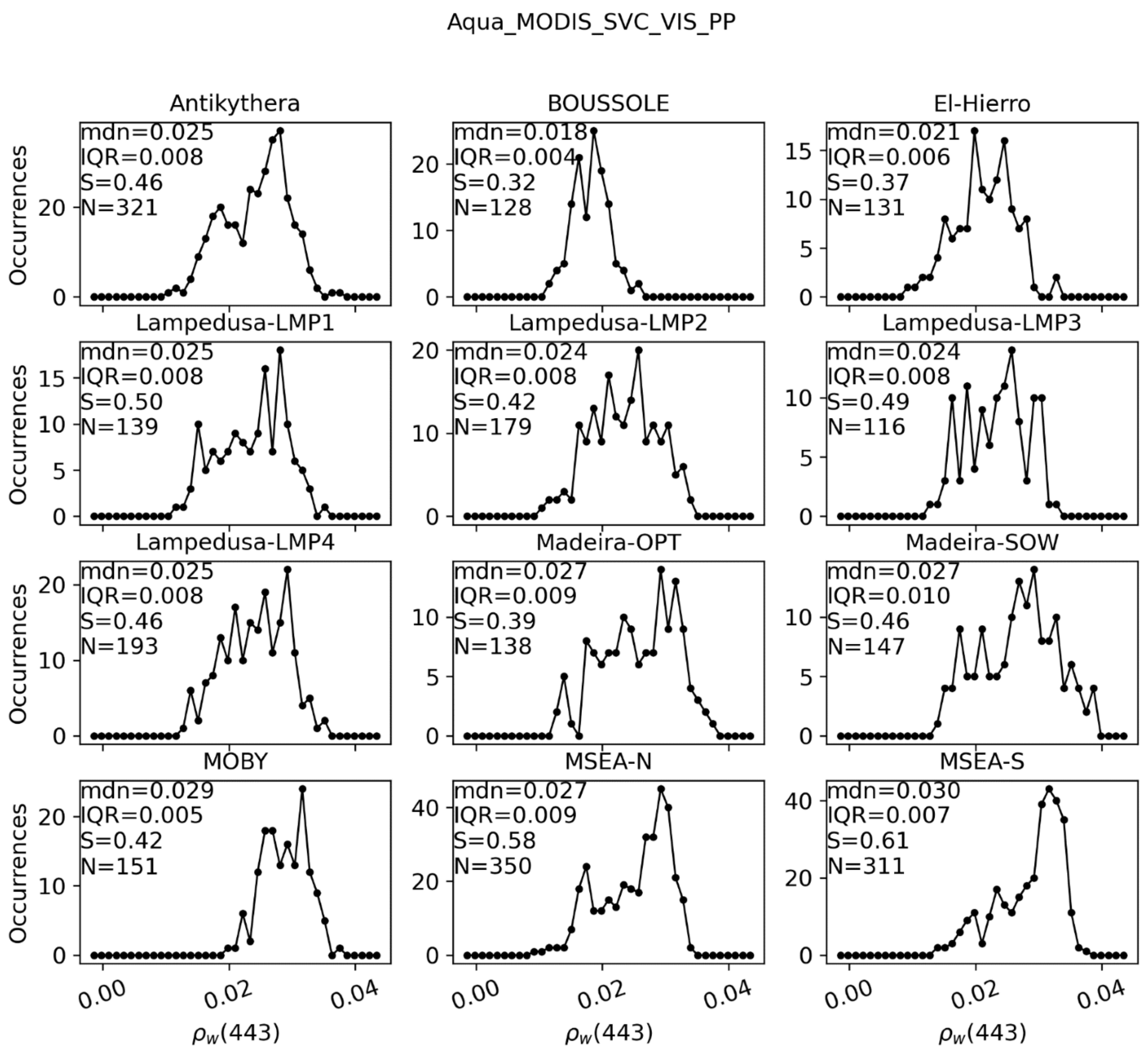
EUMETSAT


S3A_OLCI_SVC_VIS_PP
Antikythera
mdn=0.106
IQR=0.052
S=0.65
N=219
BOUSSOLE
mdn=0.157
IQR=0.034
S=0.44
N=140
El-Hierro
mdn=0.131
IQR=0.044
S=0.48
N=295
Lampedusa-LMP1
mdn=0.106
IQR=0.036
S=0.62
N=143
Lampedusa-LMP2
mdn=0.109
IQR=0.050
S=0.61
N=151
Lampedusa-LMP3
mdn=0.109
IQR=0.042
S=0.57
N=155
Lampedusa-LMP4
mdn=0.106
IQR=0.043
S=0.61
N=165
Madeira-OPT
mdn=0.102
IQR=0.046
S=0.47
N=268
Madeira-SOW
mdn=0.098
IQR=0.042
S=0.53
N=170
MOBY
mdn=0.076
IQR=0.017
S=0.31
N=285
MSEA-N
mdn=0.095
IQR=0.054
S=0.68
N=229
MSEA-S
mdn=0.082
IQR=0.043
S=0.67
N=246
Occurrences
CHL[mg/m3]

EUMETSAT


S3B_OLCI_SVC_VIS_PP
Antikythera
mdn=0.114
IQR=0.066
S=0.66
N=148
BOUSSOLE
mdn=0.163
IQR=0.029
S=0.55
N=79
El-Hierro
mdn=0.131
IQR=0.042
S=0.50
N=164
Lampedusa-LMP1
mdn=0.106
IQR=0.040
S=0.69
N=95
Lampedusa-LMP2
mdn=0.114
IQR=0.050
S=0.58
N=87
Lampedusa-LMP3
mdn=0.109
IQR=0.048
S=0.59
N=102
Lampedusa-LMP4
mdn=0.109
IQR=0.037
S=0.52
N=86
Madeira-OPT
mdn=0.095
IQR=0.043
S=0.47
N=158
Madeira-SOW
mdn=0.095
IQR=0.056
S=0.55
N=109
MOBY
mdn=0.082
IQR=0.017
S=0.36
N=184
MSEA-N
mdn=0.102
IQR=0.061
S=0.69
N=159
MSEA-S
mdn=0.085
IQR=0.044
S=0.65
N=154
Occurrences
CHL[mg/m3]

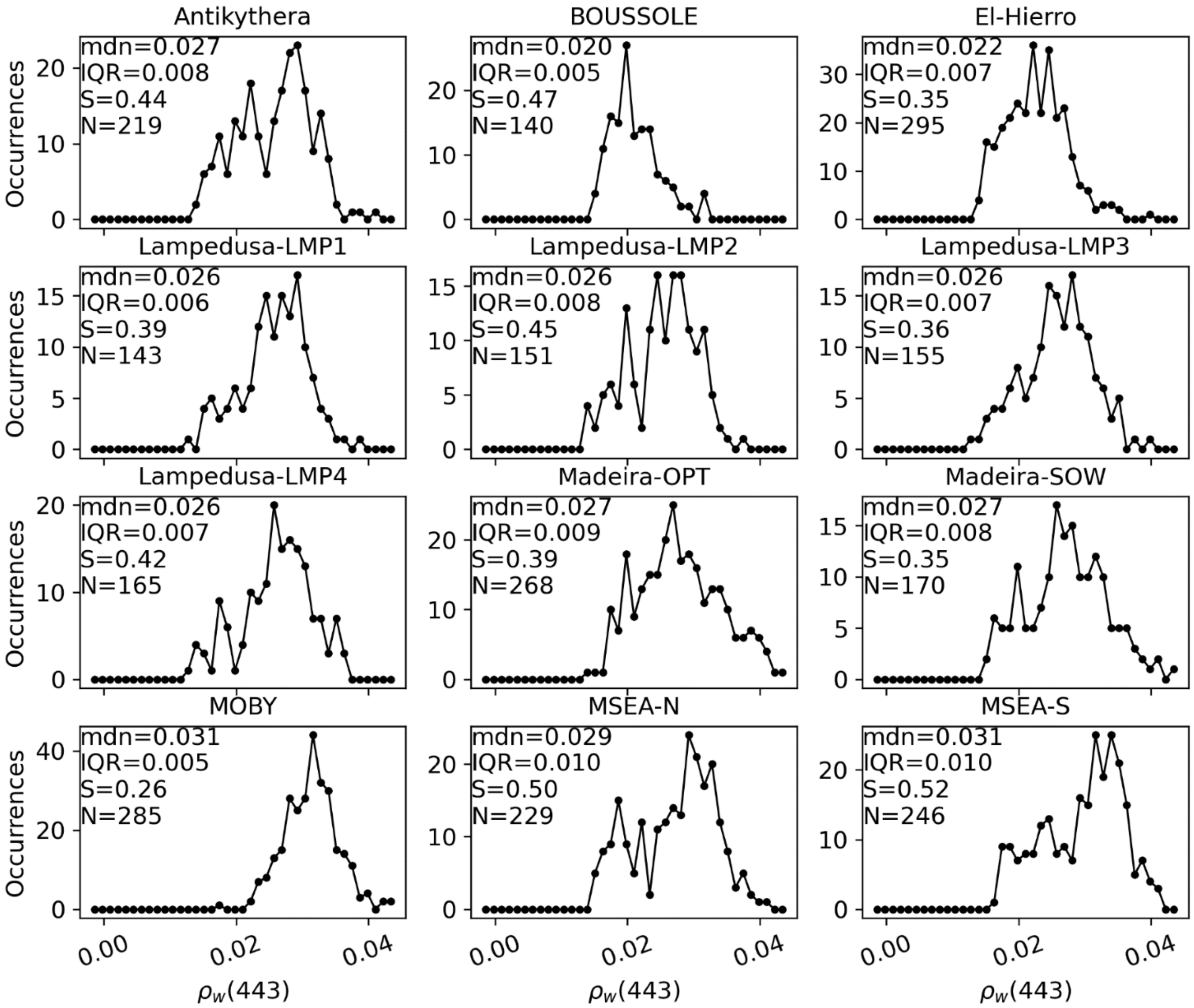

Suomi-NPP_VIIRS_SVC_VIS_PP
Antikythera
mdn=0.101
IQR=0.069
S=0.64
N=562
BOUSSOLE
mdn=0.153
IQR=0.025
S=0.35
N=393
El-Hierro
mdn=0.128
IQR=0.040
S=0.40
N=257
Lampedusa-LMP1
mdn=0.107
IQR=0.048
S=0.57
N=311
Lampedusa-LMP2
mdn=0.107
IQR=0.056
S=0.58
N=325
Lampedusa-LMP3
mdn=0.101
IQR=0.040
S=0.62
N=279
Lampedusa-LMP4
mdn=0.100
IQR=0.055
S=0.61
N=314
Madeira-OPT
mdn=0.098
IQR=0.054
S=0.48
N=252
Madeira-SOW
mdn=0.095
IQR=0.057
S=0.54
N=213
MOBY
mdn=0.070
IQR=0.020
S=0.38
N=317
MSEA-N
mdn=0.093
IQR=0.061
S=0.66
N=497
MSEA-S
mdn=0.076
IQR=0.037
S=0.67
N=442
Occurrences
CHL[mg/m3]



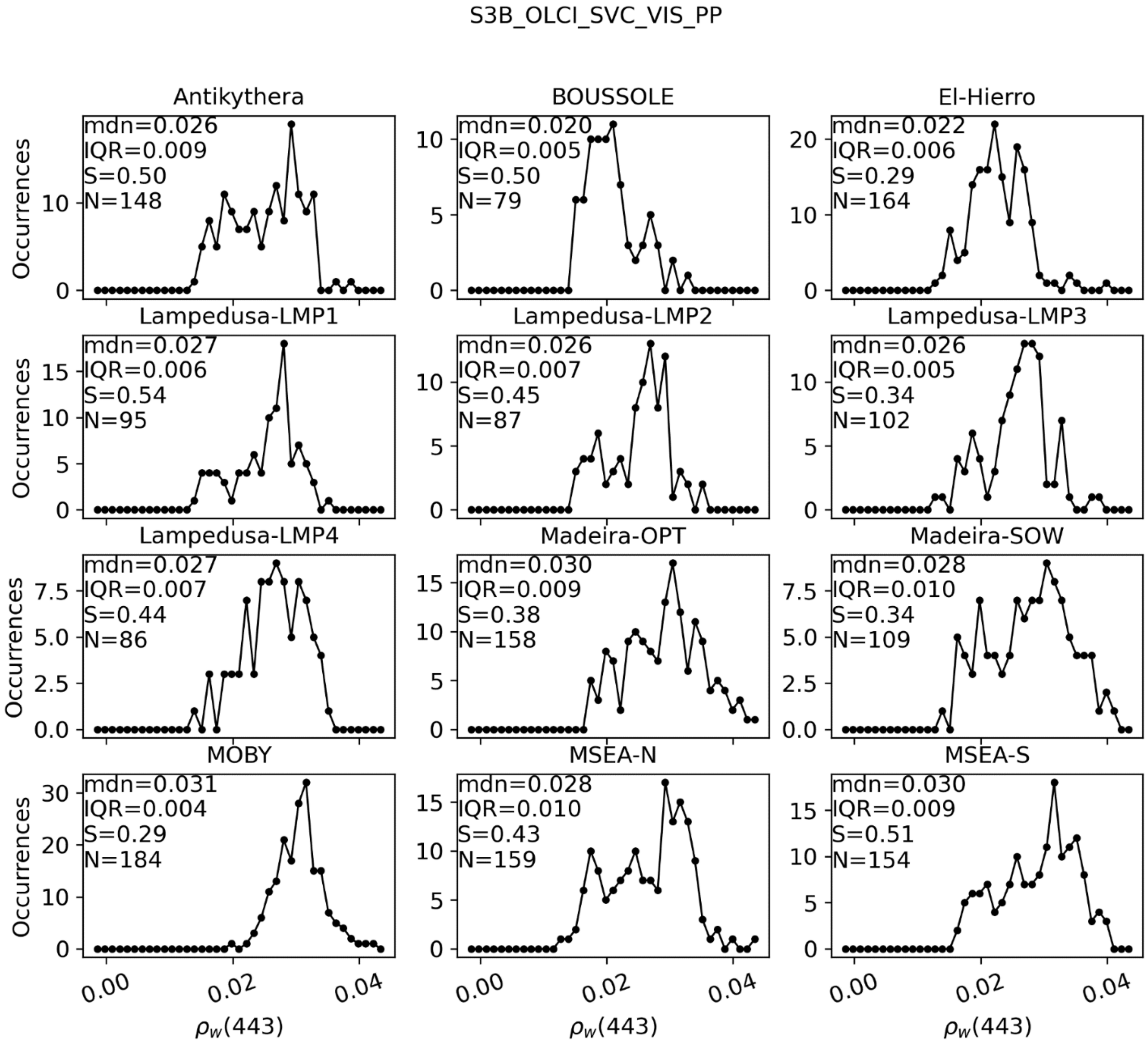
Aqua_MODIS_SVC_VIS_PP
Antikythera
mdn=0.025
IQR=0.008
S=0.46
N=321
BOUSSOLE
mdn=0.018
IQR=0.004
S=0.32
N=128
El-Hierro
mdn=0.021
IQR=0.006
S=0.37
N=131
Lampedusa-LMP1
mdn=0.025
IQR=0.008
S=0.50
N=139
Lampedusa-LMP2
mdn=0.024
IQR=0.008
S=0.42
N=179
Lampedusa-LMP3
mdn=0.024
IQR=0.008
S=0.49
N=116
Lampedusa-LMP4
mdn=0.025
IQR=0.008
S=0.46
N=193
Madeira-OPT
mdn=0.027
IQR=0.009
S=0.39
N=138
Madeira-SOW
mdn=0.027
IQR=0.010
S=0.46
N=147
MOBY
mdn=0.029
IQR=0.005
S=0.42
N=151
MSEA-N
mdn=0.027
IQR=0.009
S=0.58
N=350
MSEA-S
mdn=0.030
IQR=0.007
S=0.61
N=311
Occurrences
$\rho_w(443)$

EUMETSAT

S3A_OLCI_SVC_VIS_PP

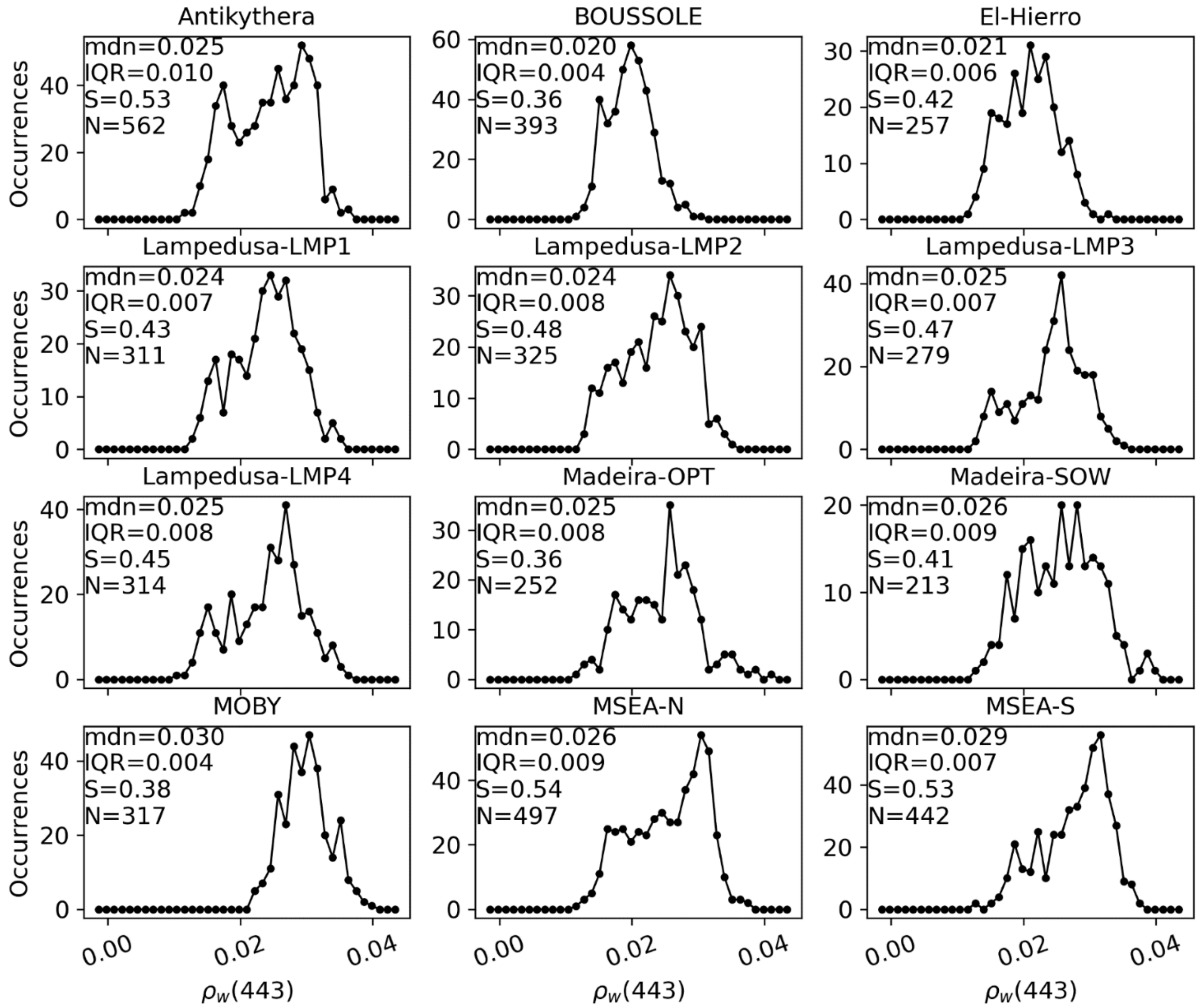


EUMETSAT

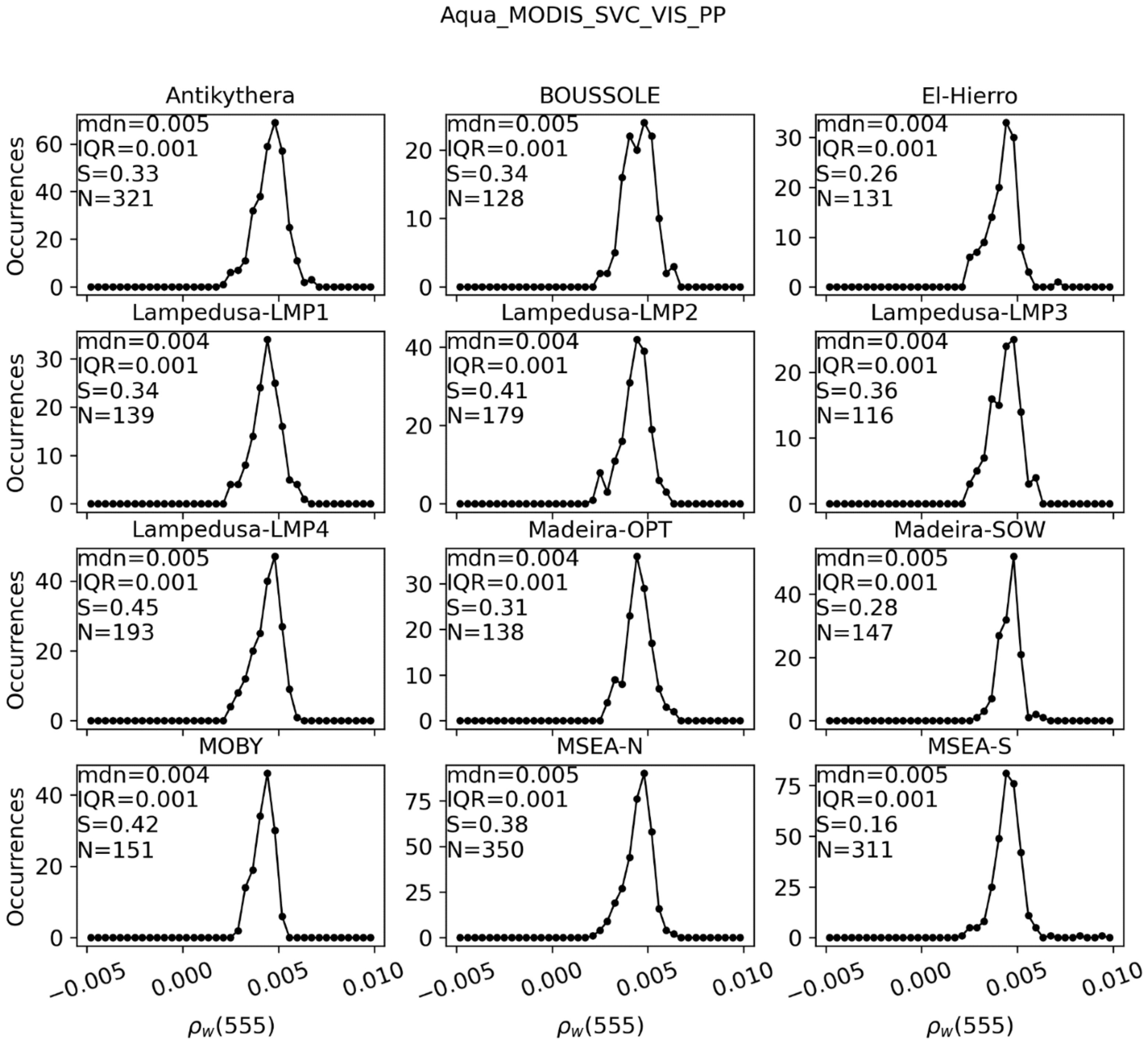

S3B_OLCI_SVC_VIS_PP
Antikythera
mdn=0.026
IQR=0.009
S=0.50
N=148
BOUSSOLE
mdn=0.020
IQR=0.005
S=0.50
N=79
El-Hierro
mdn=0.022
IQR=0.006
S=0.29
N=164
Lampedusa-LMP1
mdn=0.027
IQR=0.006
S=0.54
N=95
Lampedusa-LMP2
mdn=0.026
IQR=0.007
S=0.45
N=87
Lampedusa-LMP3
mdn=0.026
IQR=0.005
S=0.34
N=102
Lampedusa-LMP4
mdn=0.027
IQR=0.007
S=0.44
N=86
Madeira-OPT
mdn=0.030
IQR=0.009
S=0.38
N=158
Madeira-SOW
mdn=0.028
IQR=0.010
S=0.34
N=109
MOBY
mdn=0.031
IQR=0.004
S=0.29
N=184
MSEA-N
mdn=0.028
IQR=0.010
S=0.43
N=159
MSEA-S
mdn=0.030
IQR=0.009
S=0.51
N=154
Occurrences
$\rho_w(443)$

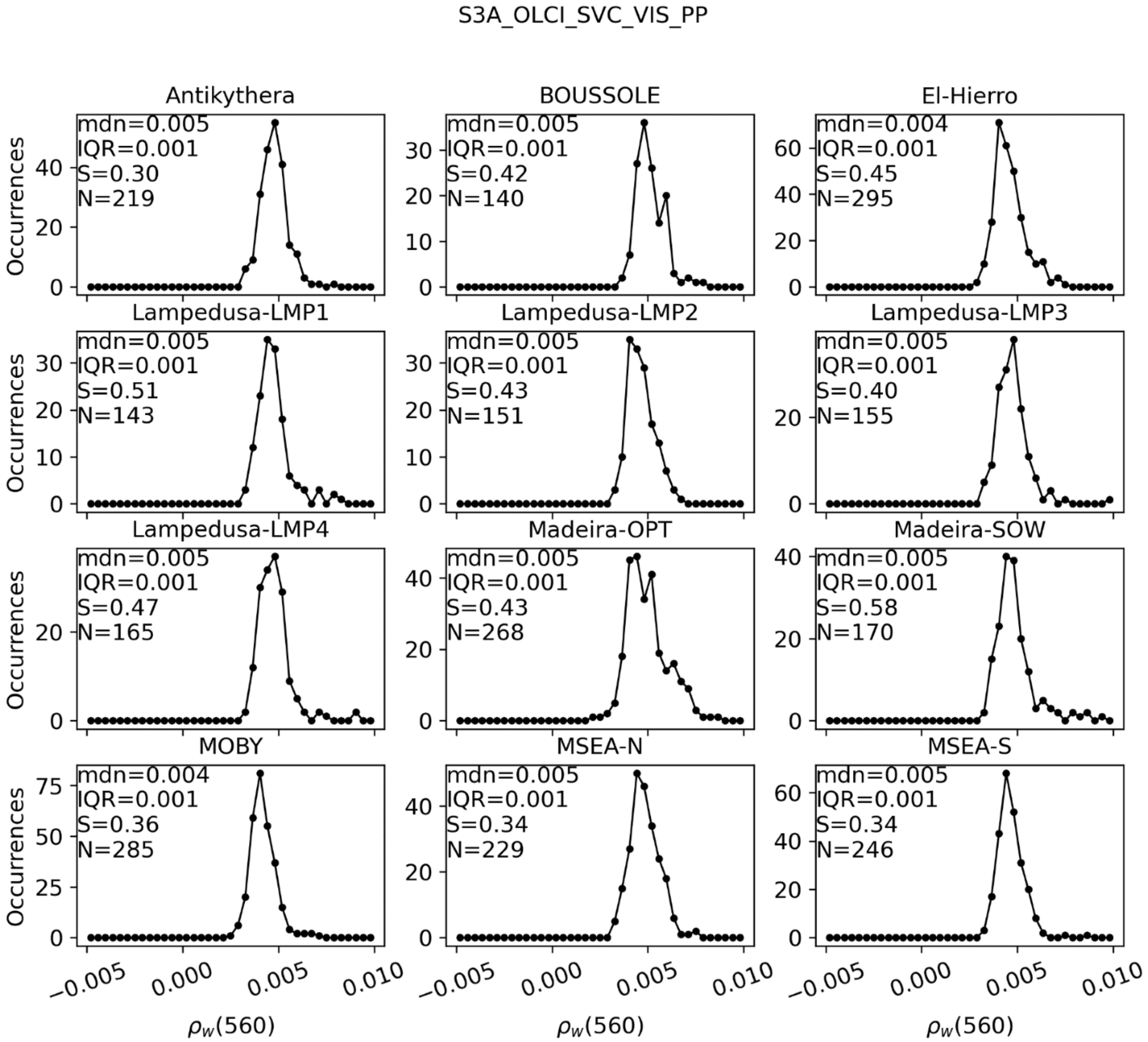
EUMETSAT

Suomi-NPP_VIIRS_SVC_VIS_PP

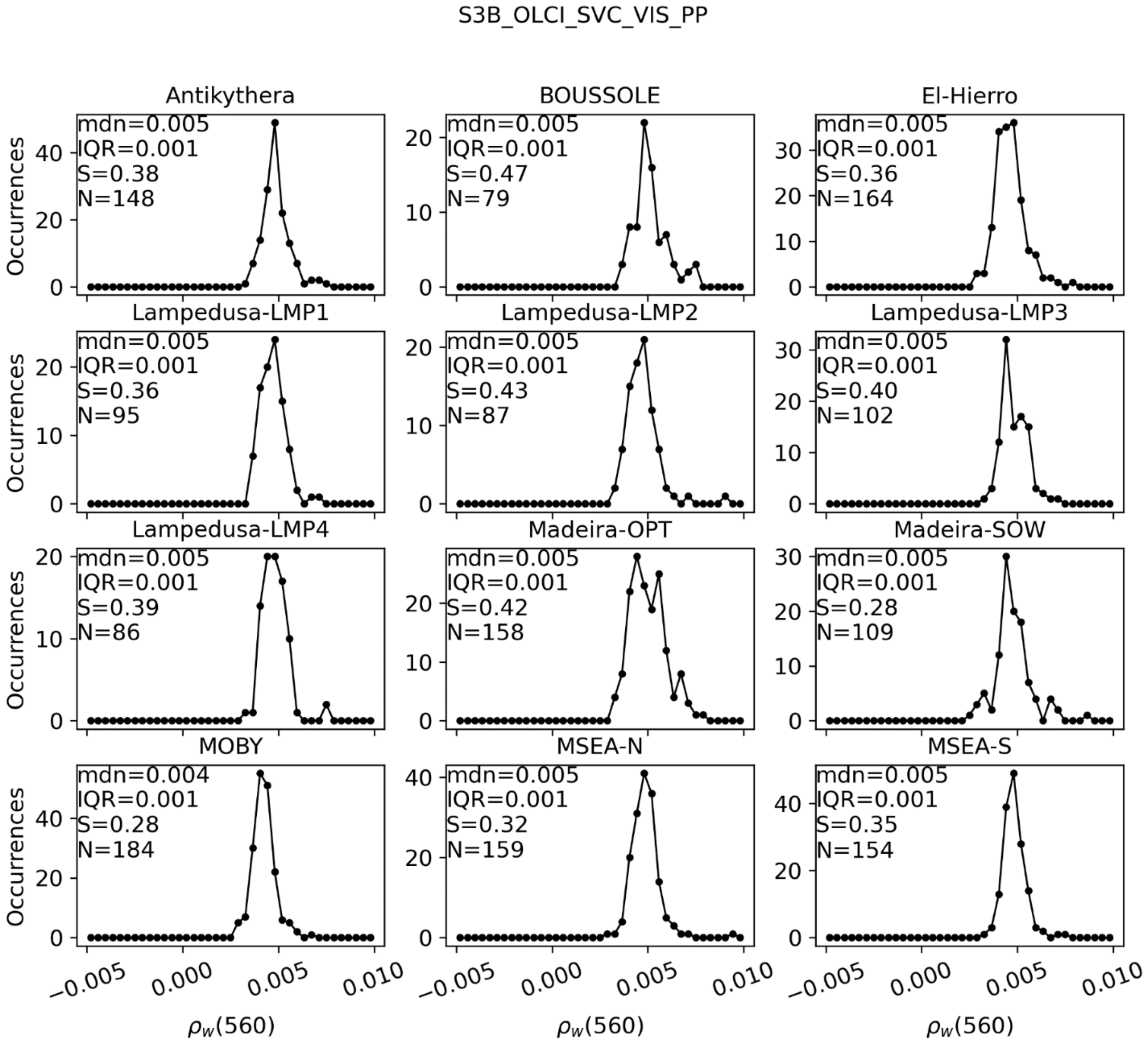


EUMETSAT

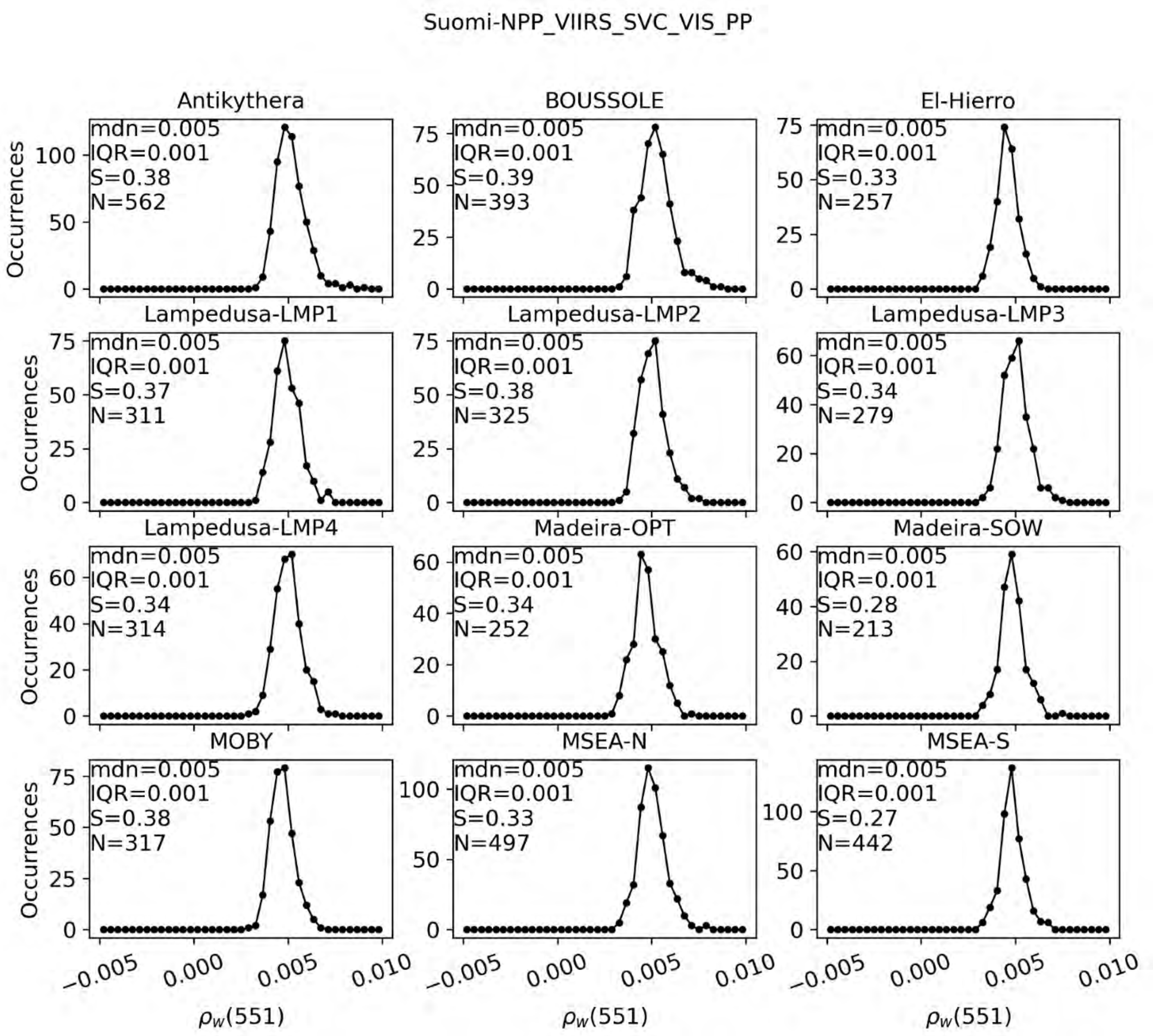

Aqua_MODIS_SVC_VIS_PP
Antikythera
mdn=0.005
IQR=0.001
S=0.33
N=321
BOUSSOLE
mdn=0.005
IQR=0.001
S=0.34
N=128
El-Hierro
mdn=0.004
IQR=0.001
S=0.26
N=131
Lampedusa-LMP1
mdn=0.004
IQR=0.001
S=0.34
N=139
Lampedusa-LMP2
mdn=0.004
IQR=0.001
S=0.41
N=179
Lampedusa-LMP3
mdn=0.004
IQR=0.001
S=0.36
N=116
Lampedusa-LMP4
mdn=0.005
IQR=0.001
S=0.45
N=193
Madeira-OPT
mdn=0.004
IQR=0.001
S=0.31
N=138
Madeira-SOW
mdn=0.005
IQR=0.001
S=0.28
N=147
MOBY
mdn=0.004
IQR=0.001
S=0.42
N=151
MSEA-N
mdn=0.005
IQR=0.001
S=0.38
N=350
MSEA-S
mdn=0.005
IQR=0.001
S=0.16
N=311
Occurrences
$\rho_w(555)$

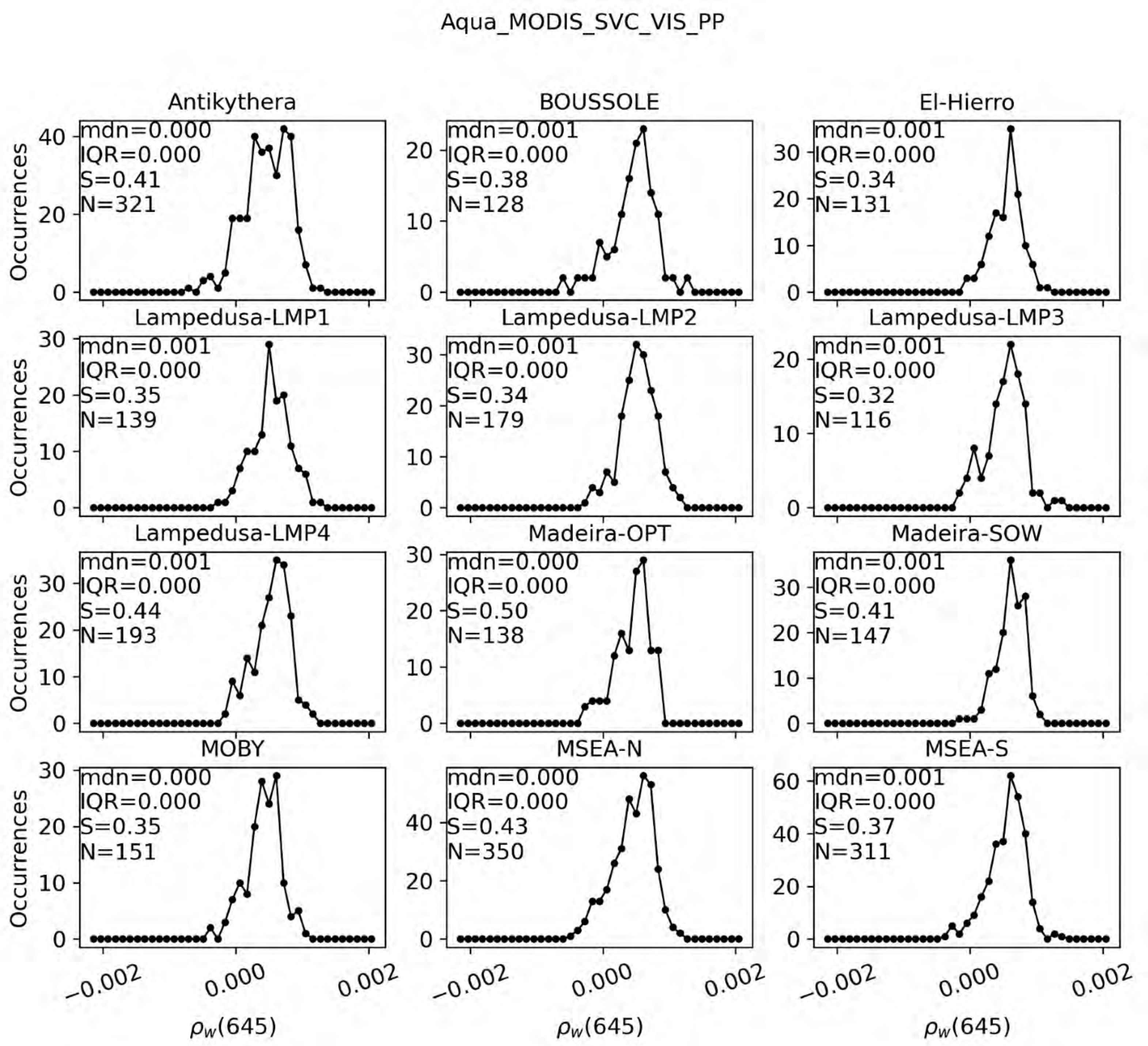

S3A_OLCI_SVC_VIS_PP
Antikythera
mdn=0.005
IQR=0.001
S=0.30
N=219
BOUSSOLE
mdn=0.005
IQR=0.001
S=0.42
N=140
El-Hierro
mdn=0.004
IQR=0.001
S=0.45
N=295
Lampedusa-LMP1
mdn=0.005
IQR=0.001
S=0.51
N=143
Lampedusa-LMP2
mdn=0.005
IQR=0.001
S=0.43
N=151
Lampedusa-LMP3
mdn=0.005
IQR=0.001
S=0.40
N=155
Lampedusa-LMP4
mdn=0.005
IQR=0.001
S=0.47
N=165
Madeira-OPT
mdn=0.005
IQR=0.001
S=0.43
N=268
Madeira-SOW
mdn=0.005
IQR=0.001
S=0.58
N=170
MOBY
mdn=0.004
IQR=0.001
S=0.36
N=285
MSEA-N
mdn=0.005
IQR=0.001
S=0.34
N=229
MSEA-S
mdn=0.005
IQR=0.001
S=0.34
N=246
Occurrences
$\rho_w(560)$

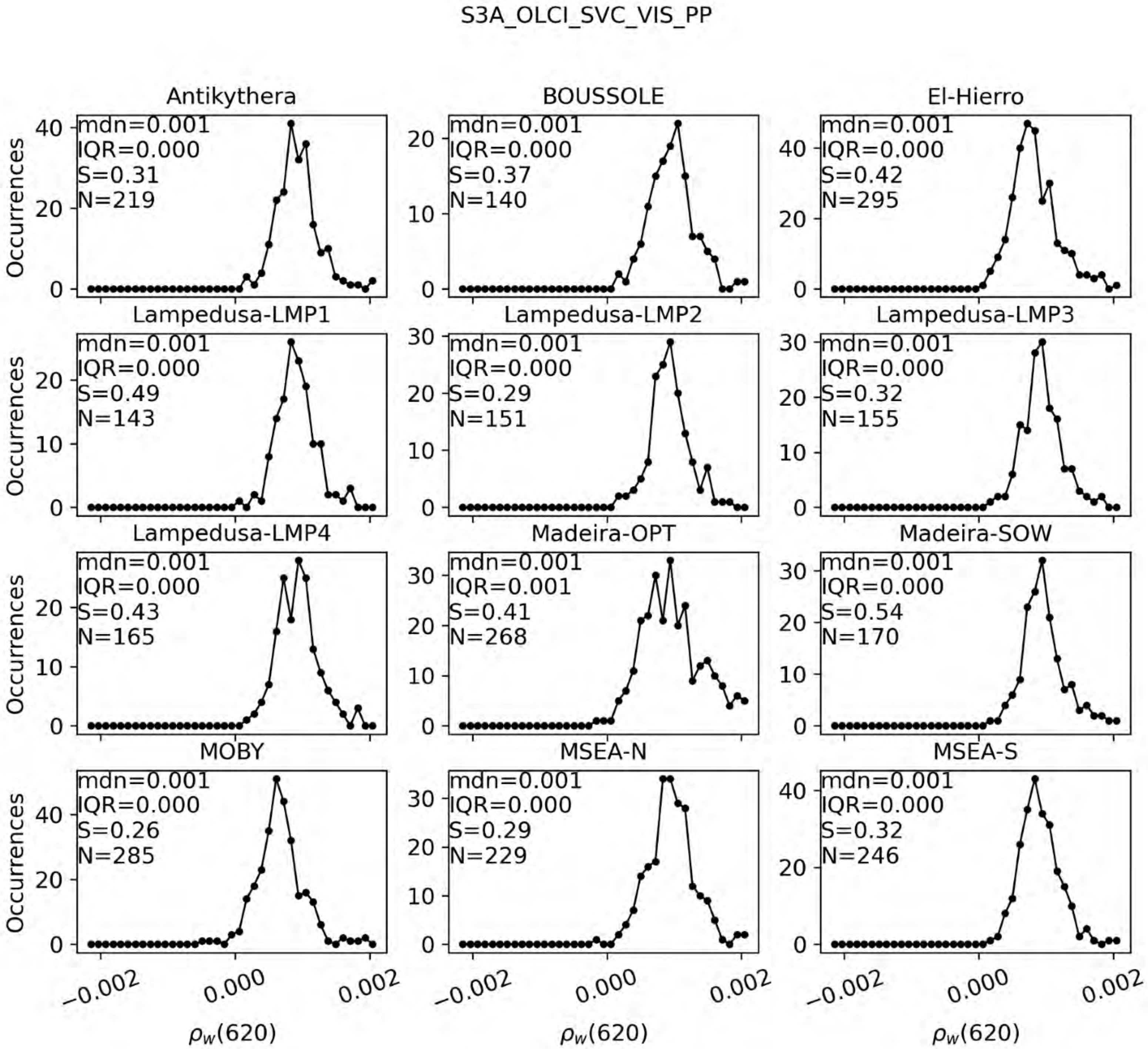
EUMETSAT

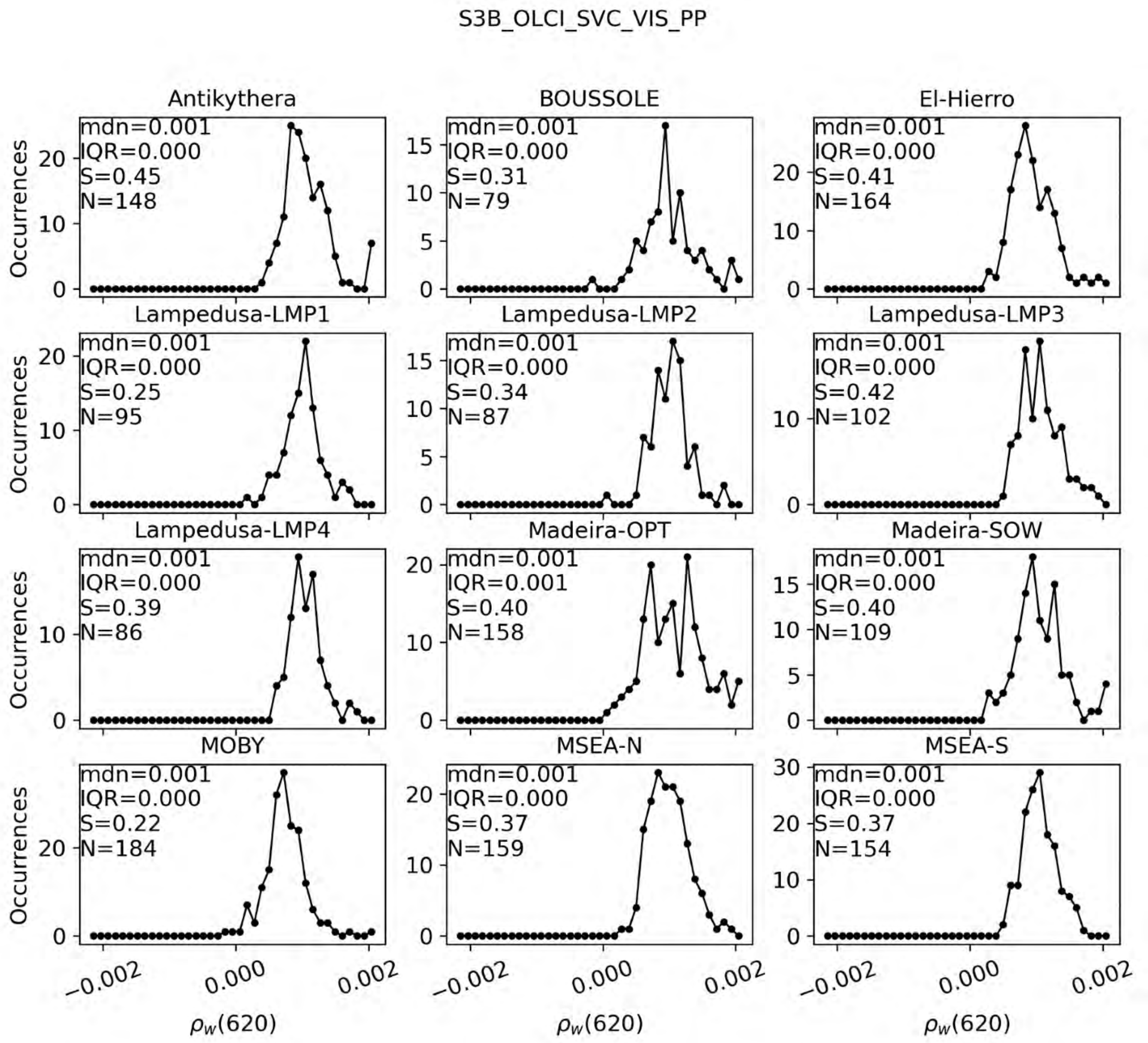


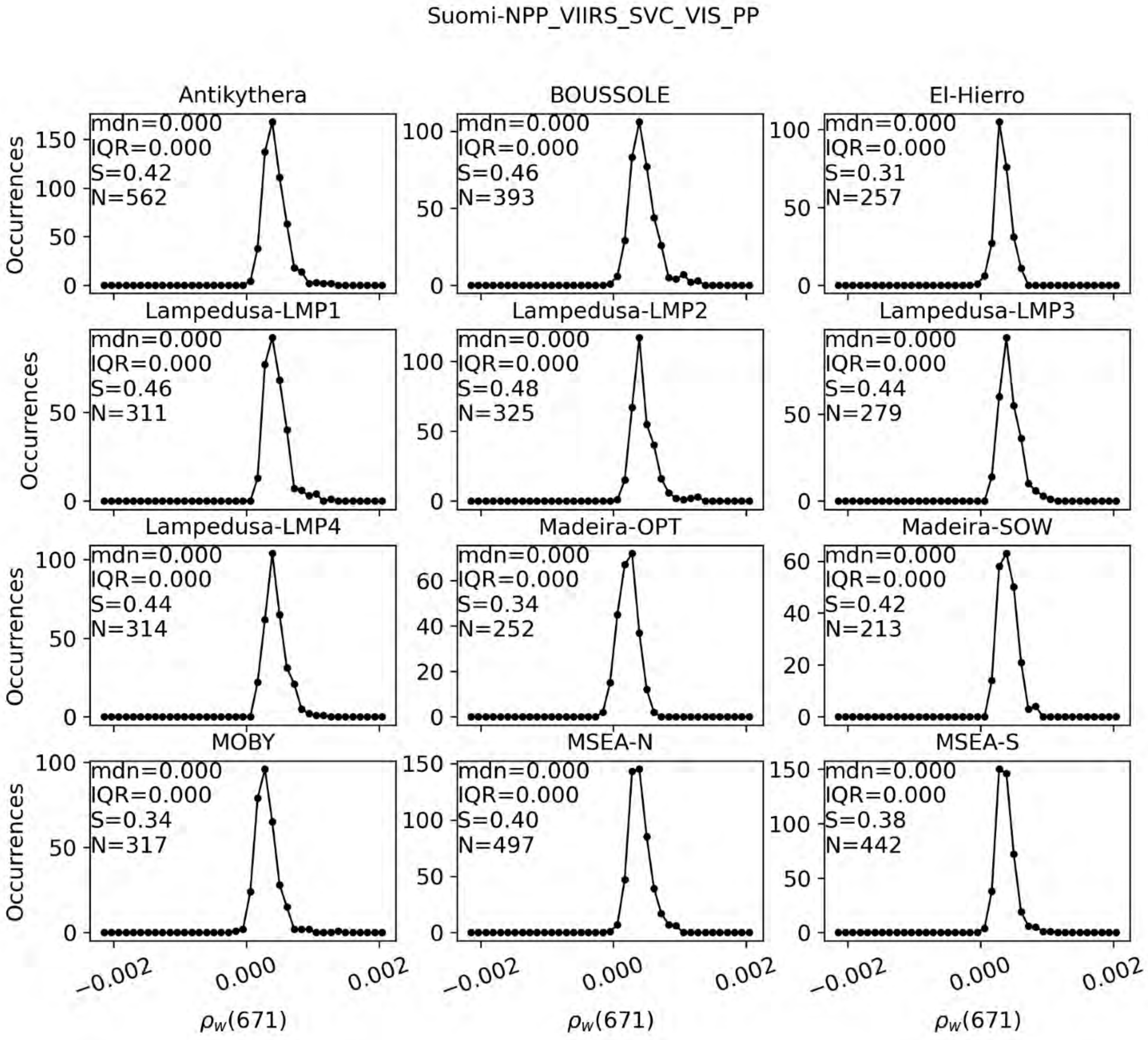
S3B_OLCI_SVC_VIS_PP
Antikythera
mdn=0.005
IQR=0.001
S=0.38
N=148
BOUSSOLE
mdn=0.005
IQR=0.001
S=0.47
N=79
El-Hierro
mdn=0.005
IQR=0.001
S=0.36
N=164
Lampedusa-LMP1
mdn=0.005
IQR=0.001
S=0.36
N=95
Lampedusa-LMP2
mdn=0.005
IQR=0.001
S=0.43
N=87
Lampedusa-LMP3
mdn=0.005
IQR=0.001
S=0.40
N=102
Lampedusa-LMP4
mdn=0.005
IQR=0.001
S=0.39
N=86
Madeira-OPT
mdn=0.005
IQR=0.001
S=0.42
N=158
Madeira-SOW
mdn=0.005
IQR=0.001
S=0.28
N=109
MOBY
mdn=0.004
IQR=0.001
S=0.28
N=184
MSEA-N
mdn=0.005
IQR=0.001
S=0.32
N=159
MSEA-S
mdn=0.005
IQR=0.001
S=0.35
N=154
Occurrences
−0.005
0.000
0.005
0.010
ρw(560)


Suomi-NPP_VIIRS_SVC_VIS_PP
Antikythera
mdn=0.005
IQR=0.001
S=0.38
N=562
BOUSSOLE
mdn=0.005
IQR=0.001
S=0.39
N=393
El-Hierro
mdn=0.005
IQR=0.001
S=0.33
N=257
Lampedusa-LMP1
mdn=0.005
IQR=0.001
S=0.37
N=311
Lampedusa-LMP2
mdn=0.005
IQR=0.001
S=0.38
N=325
Lampedusa-LMP3
mdn=0.005
IQR=0.001
S=0.34
N=279
Lampedusa-LMP4
mdn=0.005
IQR=0.001
S=0.34
N=314
Madeira-OPT
mdn=0.005
IQR=0.001
S=0.34
N=252
Madeira-SOW
mdn=0.005
IQR=0.001
S=0.28
N=213
MOBY
mdn=0.005
IQR=0.001
S=0.38
N=317
MSEA-N
mdn=0.005
IQR=0.001
S=0.33
N=497
MSEA-S
mdn=0.005
IQR=0.001
S=0.27
N=442
Occurrences
−0.005
0.000
0.005
0.010
$\rho_w(551)$

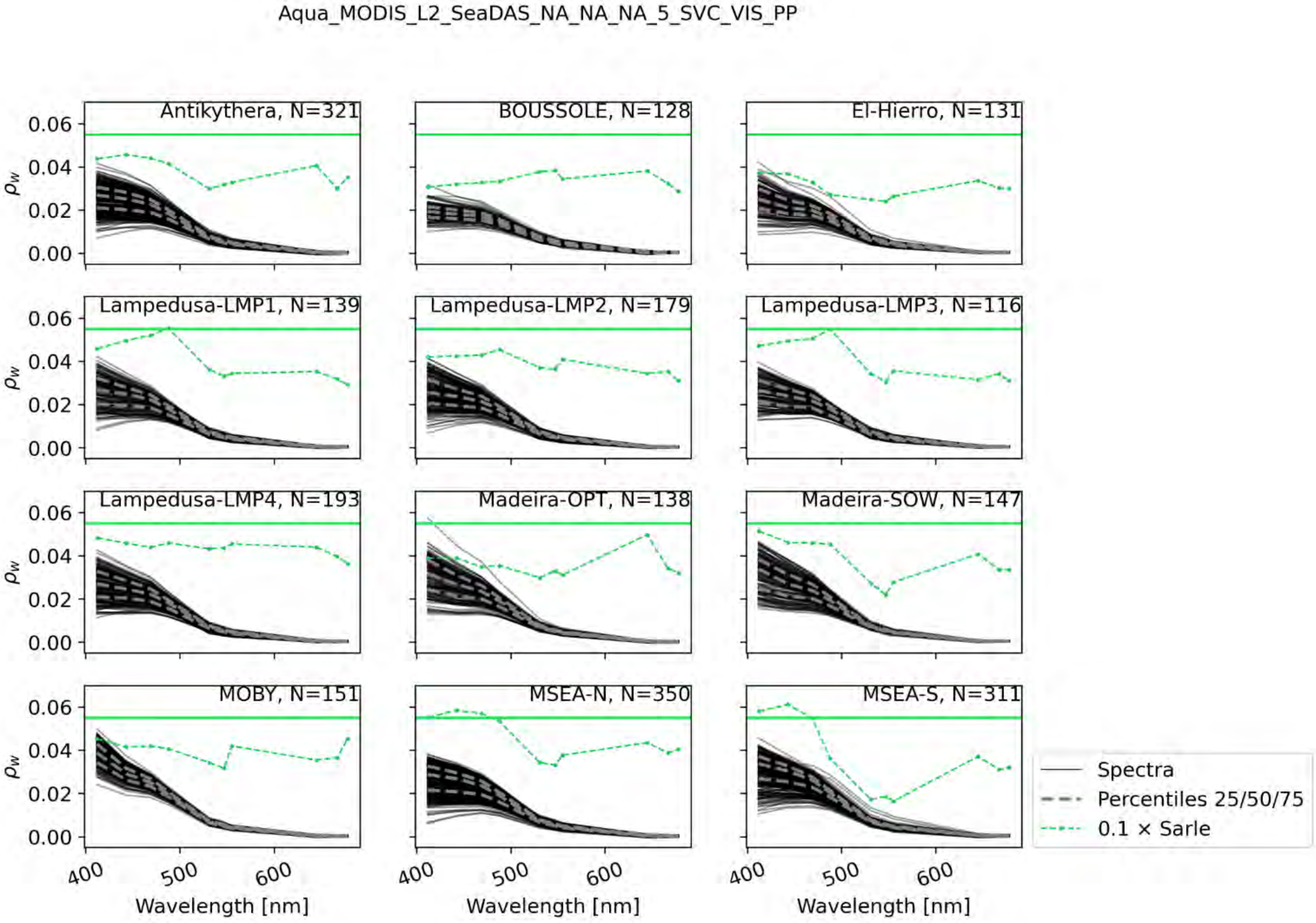

Aqua_MODIS_SVC_VIS_PP
Antikythera
mdn=0.000
IQR=0.000
S=0.41
N=321
BOUSSOLE
mdn=0.001
IQR=0.000
S=0.38
N=128
El-Hierro
mdn=0.001
IQR=0.000
S=0.34
N=131
Lampedusa-LMP1
mdn=0.001
IQR=0.000
S=0.35
N=139
Lampedusa-LMP2
mdn=0.001
IQR=0.000
S=0.34
N=179
Lampedusa-LMP3
mdn=0.001
IQR=0.000
S=0.32
N=116
Lampedusa-LMP4
mdn=0.001
IQR=0.000
S=0.44
N=193
Madeira-OPT
mdn=0.000
IQR=0.000
S=0.50
N=138
Madeira-SOW
mdn=0.001
IQR=0.000
S=0.41
N=147
MOBY
mdn=0.000
IQR=0.000
S=0.35
N=151
MSEA-N
mdn=0.000
IQR=0.000
S=0.43
N=350
MSEA-S
mdn=0.001
IQR=0.000
S=0.37
N=311
Occurrences
ρw(645)


S3A_OLCI_SVC_VIS_PP
Antikythera
mdn=0.001
IQR=0.000
S=0.31
N=219
BOUSSOLE
mdn=0.001
IQR=0.000
S=0.37
N=140
El-Hierro
mdn=0.001
IQR=0.000
S=0.42
N=295
Lampedusa-LMP1
mdn=0.001
IQR=0.000
S=0.49
N=143
Lampedusa-LMP2
mdn=0.001
IQR=0.000
S=0.29
N=151
Lampedusa-LMP3
mdn=0.001
IQR=0.000
S=0.32
N=155
Lampedusa-LMP4
mdn=0.001
IQR=0.000
S=0.43
N=165
Madeira-OPT
mdn=0.001
IQR=0.001
S=0.41
N=268
Madeira-SOW
mdn=0.001
IQR=0.000
S=0.54
N=170
MOBY
mdn=0.001
IQR=0.000
S=0.26
N=285
MSEA-N
mdn=0.001
IQR=0.000
S=0.29
N=229
MSEA-S
mdn=0.001
IQR=0.000
S=0.32
N=246
Occurrences
ρw(620)


S3B_OLCI_SVC_VIS_PP
Antikythera
mdn=0.001
IQR=0.000
S=0.45
N=148
BOUSSOLE
mdn=0.001
IQR=0.000
S=0.31
N=79
El-Hierro
mdn=0.001
IQR=0.000
S=0.41
N=164
Lampedusa-LMP1
mdn=0.001
IQR=0.000
S=0.25
N=95
Lampedusa-LMP2
mdn=0.001
IQR=0.000
S=0.34
N=87
Lampedusa-LMP3
mdn=0.001
IQR=0.000
S=0.42
N=102
Lampedusa-LMP4
mdn=0.001
IQR=0.000
S=0.39
N=86
Madeira-OPT
mdn=0.001
IQR=0.001
S=0.40
N=158
Madeira-SOW
mdn=0.001
IQR=0.000
S=0.40
N=109
MOBY
mdn=0.001
IQR=0.000
S=0.22
N=184
MSEA-N
mdn=0.001
IQR=0.000
S=0.37
N=159
MSEA-S
mdn=0.001
IQR=0.000
S=0.37
N=154
Occurrences
−0.002
0.000
0.002
ρw(620)

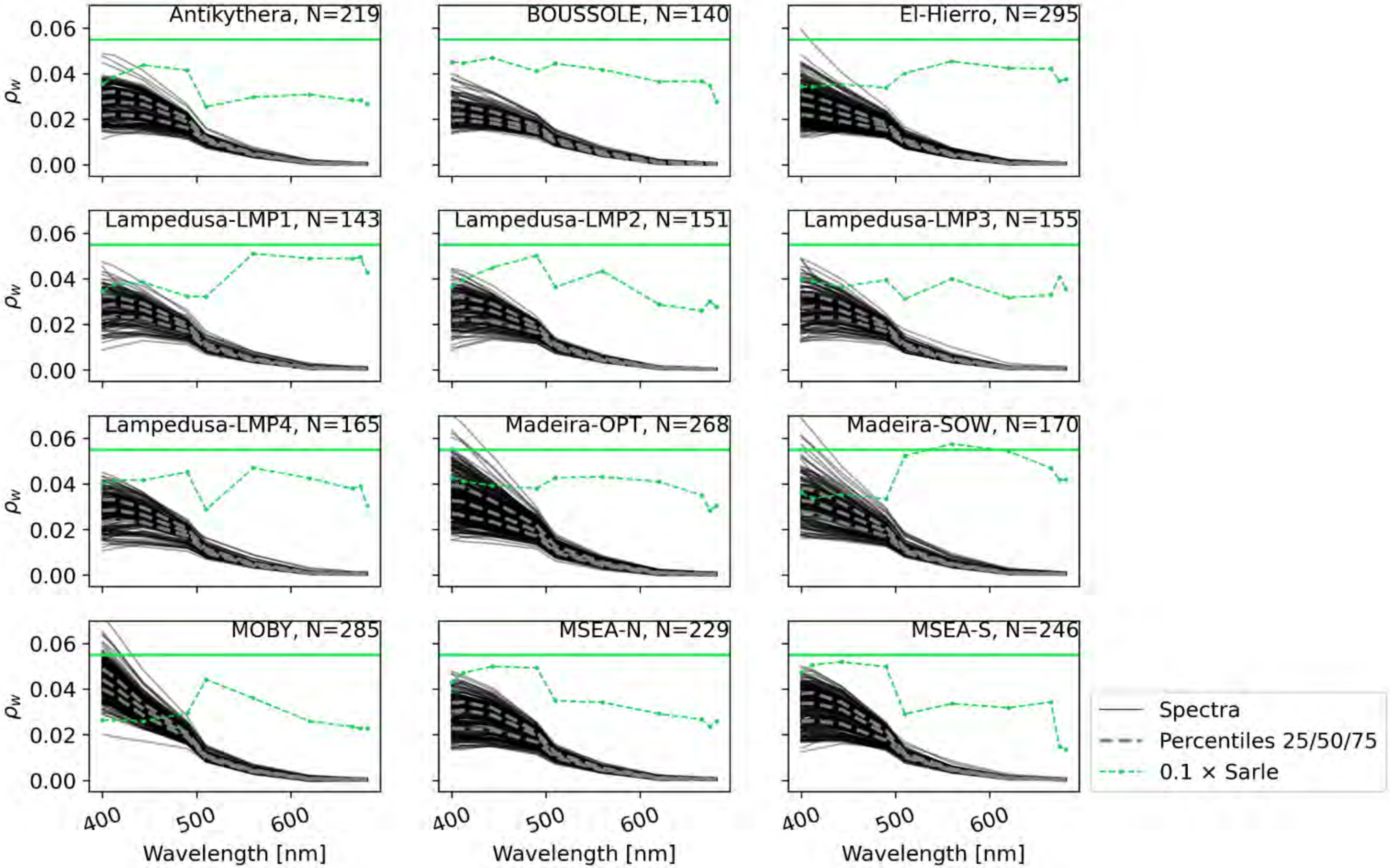


Suomi-NPP_VIIRS_SVC_VIS_PP
Antikythera
mdn=0.000
IQR=0.000
S=0.42
N=562
BOUSSOLE
mdn=0.000
IQR=0.000
S=0.46
N=393
El-Hierro
mdn=0.000
IQR=0.000
S=0.31
N=257
Lampedusa-LMP1
mdn=0.000
IQR=0.000
S=0.46
N=311
Lampedusa-LMP2
mdn=0.000
IQR=0.000
S=0.48
N=325
Lampedusa-LMP3
mdn=0.000
IQR=0.000
S=0.44
N=279
Lampedusa-LMP4
mdn=0.000
IQR=0.000
S=0.44
N=314
Madeira-OPT
mdn=0.000
IQR=0.000
S=0.34
N=252
Madeira-SOW
mdn=0.000
IQR=0.000
S=0.42
N=213
MOBY
mdn=0.000
IQR=0.000
S=0.34
N=317
MSEA-N
mdn=0.000
IQR=0.000
S=0.40
N=497
MSEA-S
mdn=0.000
IQR=0.000
S=0.38
N=442
Occurrences
−0.002
0.000
0.002
ρw(671)

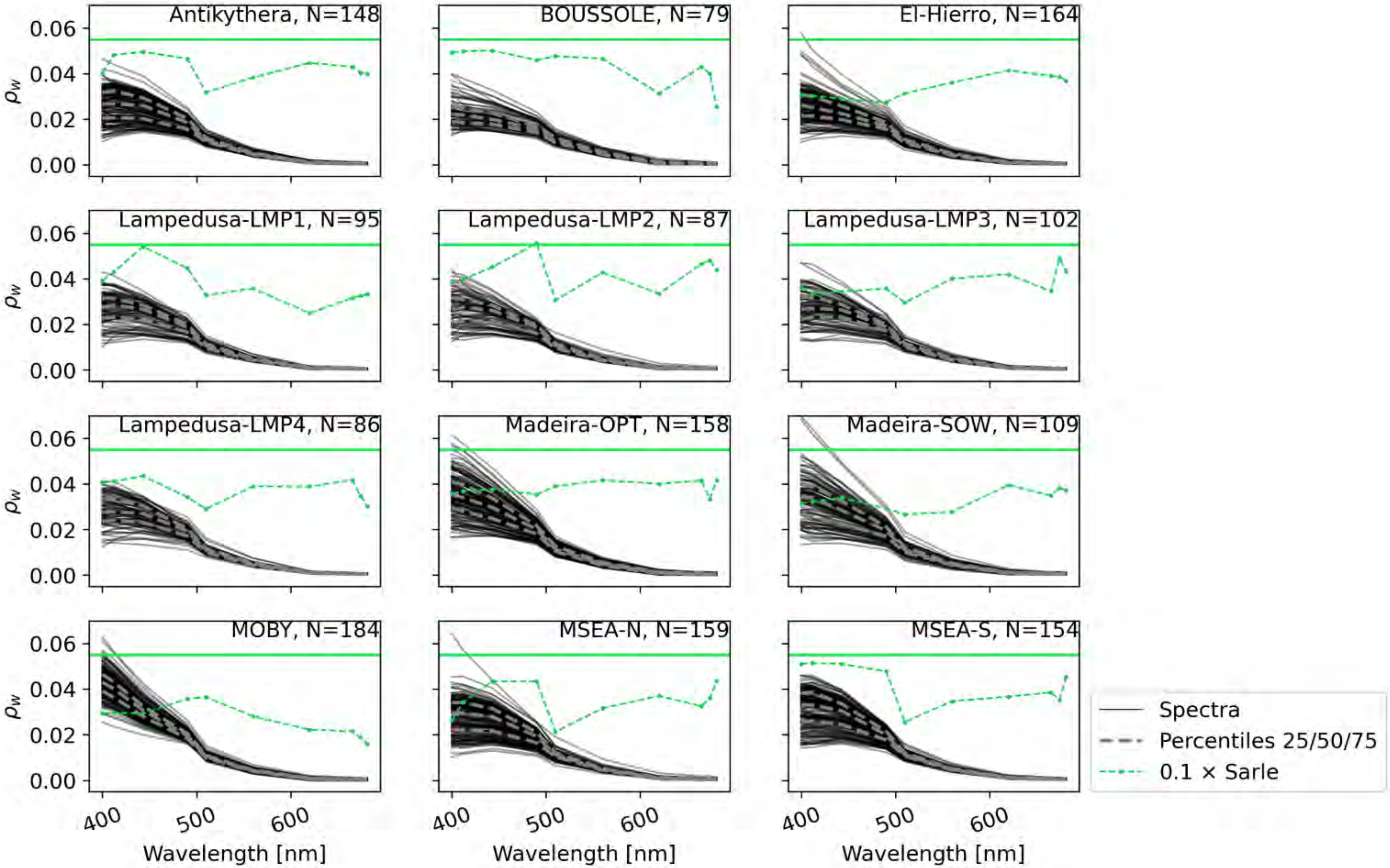

Aqua_MODIS_L2_SeaDAS_NA_NA_NA_5_SVC_VIS_PP
Antikythera, N=321
BOUSSOLE, N=128
El-Hierro, N=131
Lampedusa-LMP1, N=139
Lampedusa-LMP2, N=179
Lampedusa-LMP3, N=116
Lampedusa-LMP4, N=193
Madeira-OPT, N=138
Madeira-SOW, N=147
MOBY, N=151
MSEA-N, N=350
MSEA-S, N=311
ρ_w
0.06
0.04
0.02
0.00
400
500
600
Wavelength [nm]
Spectra
Percentiles 25/50/75
0.1 × Sarle

EUMETSAT

S3A_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP

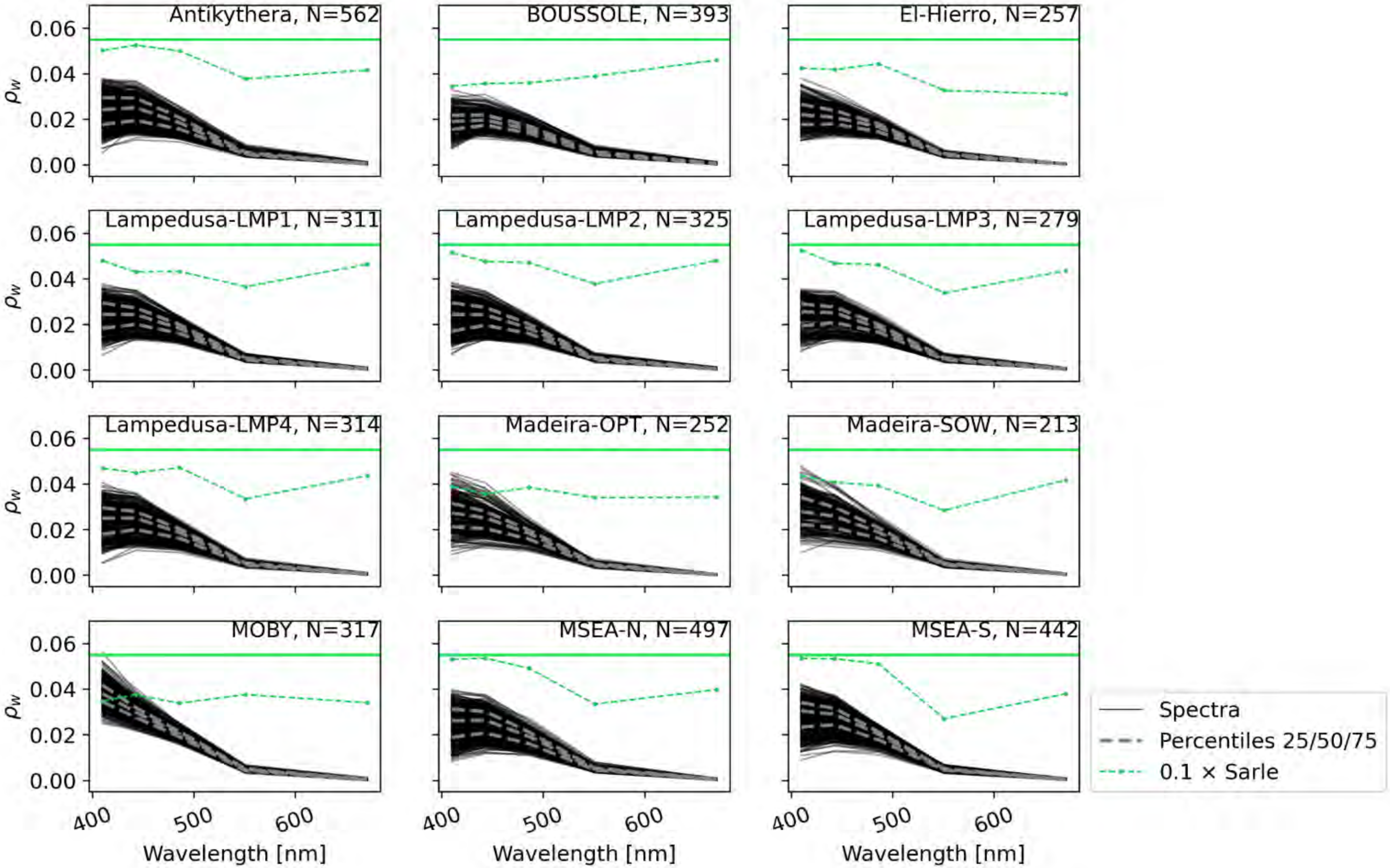


S3B_OLCI_L2_IPF_07.01_OL_L2M.003.01_FR_5_SVC_VIS_PP



EUMETSAT

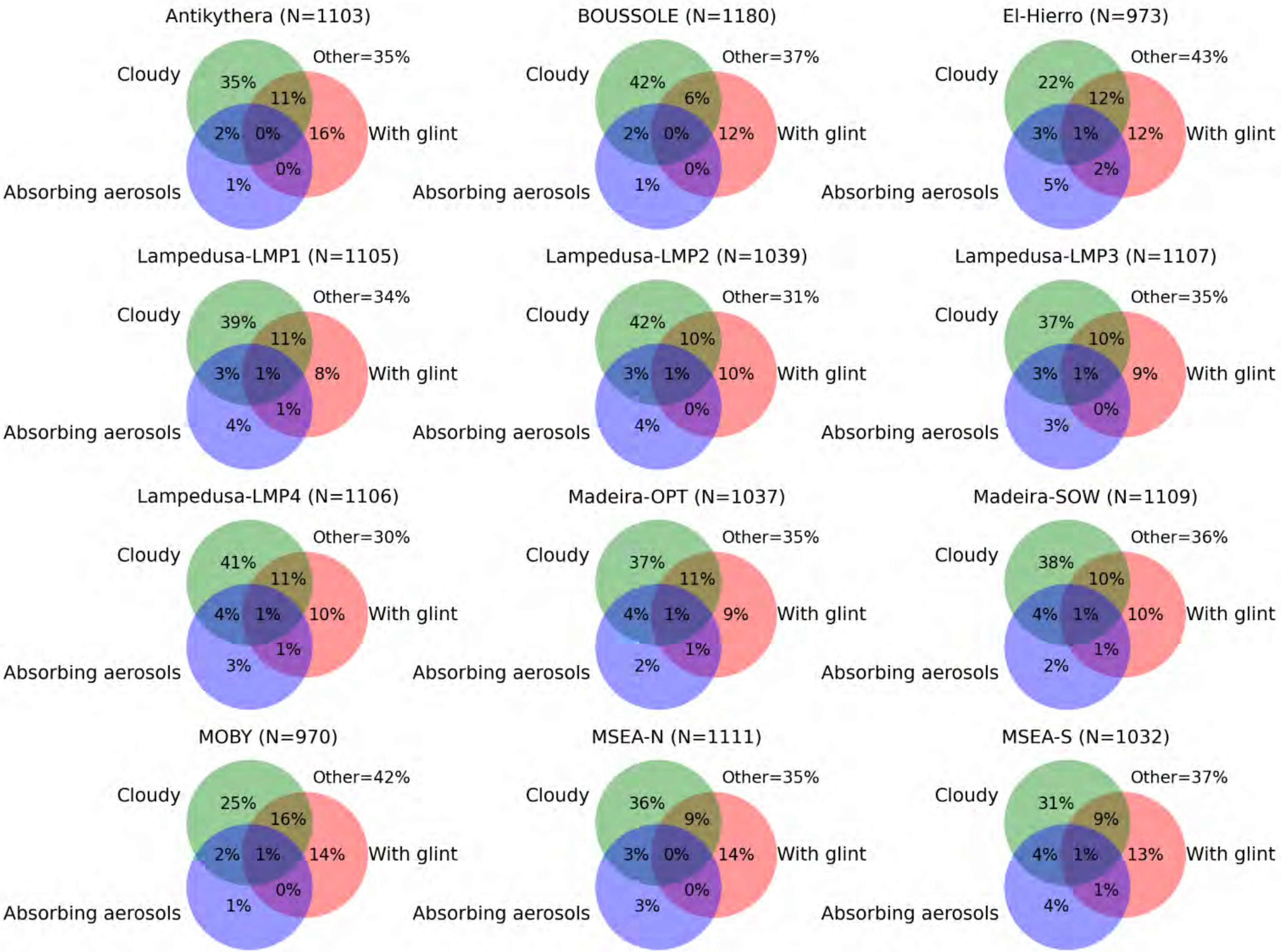
Suomi-NPP_VIIRS_L2_SeaDAS_NA_NA_NA_5_SVC_VIS_PP



Impact of different screening criteria in SVC_VIS_PP

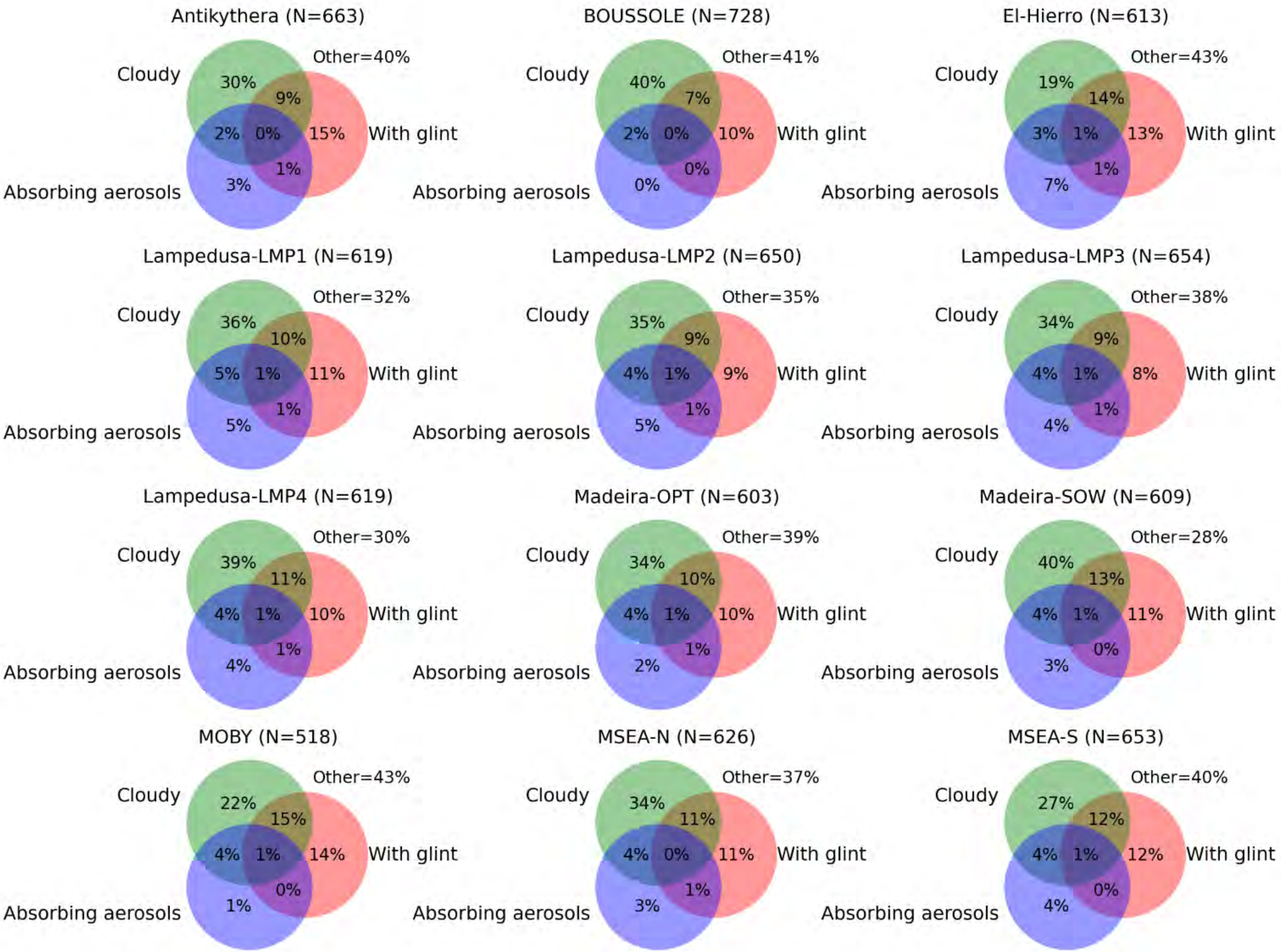
OLCI-A

Cloudy = CLOUD or CLOUD_AMBIGUOUS or CLOUD_MARGIN
With glint = HIGHGLINT or MEGLINT
Absorbing aerosols = ANNOT_ABSO_D

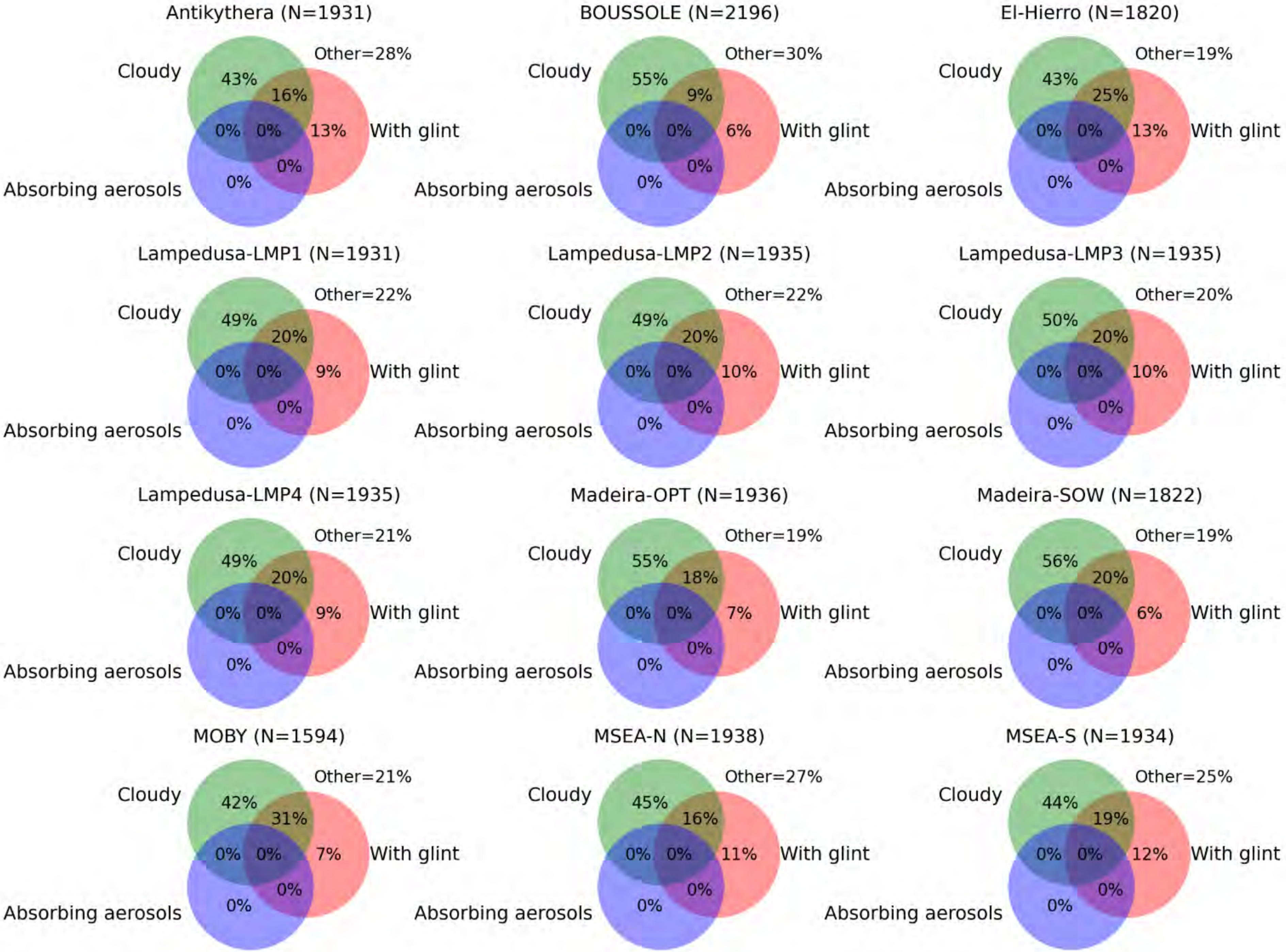


OLCI-B

Cloudy = CLOUD or CLOUD_AMBIGUOUS or CLOUD_MARGIN
With glint = HIGHGLINT or MEGLINT
Absorbing aerosols = ANNOT_ABSO_D

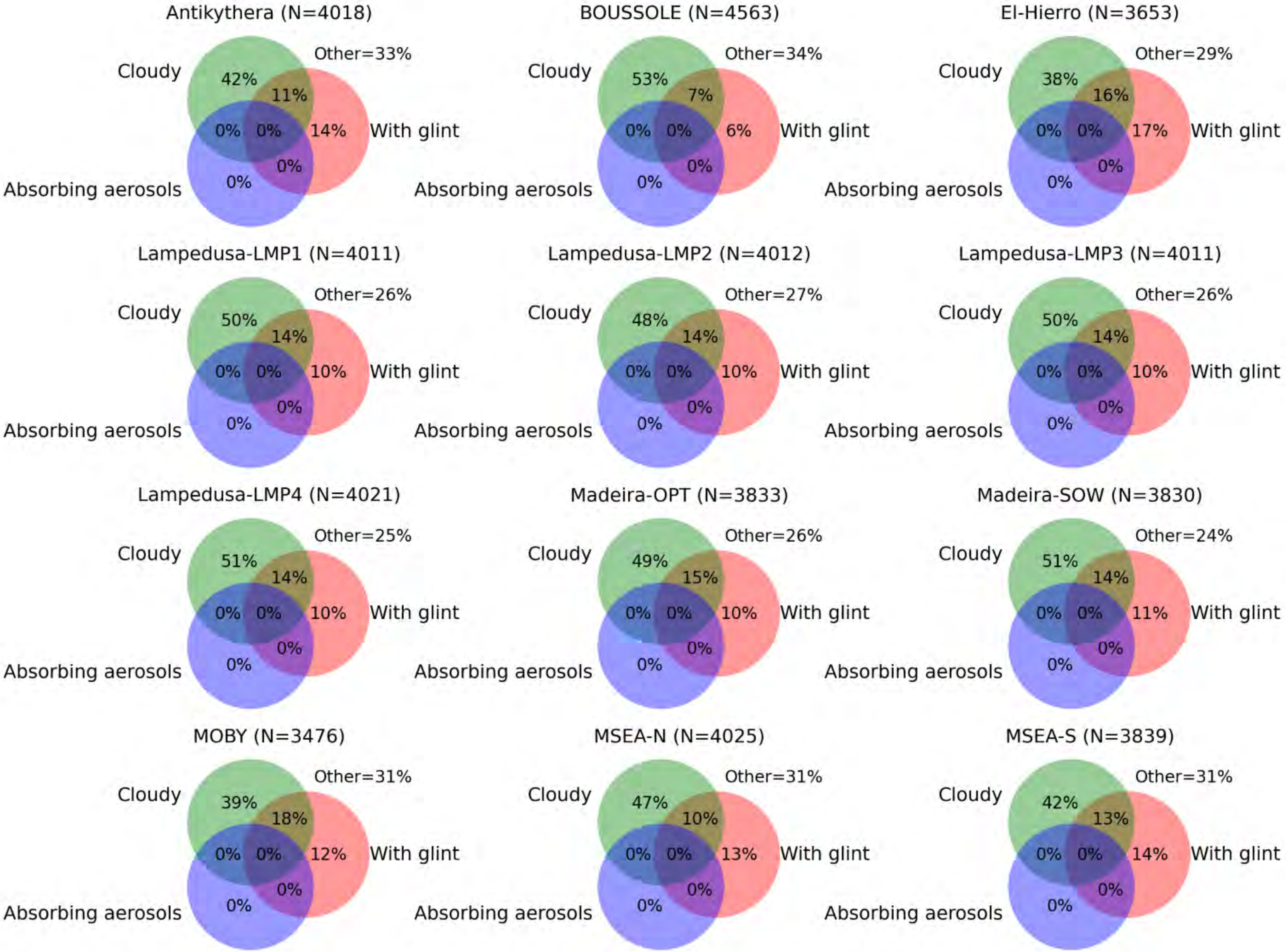


MODISA



Cloudy = CLDICE
With glint = HIGLINT or MODGLINT
Absorbing aerosols = ABSAER

VSNPP

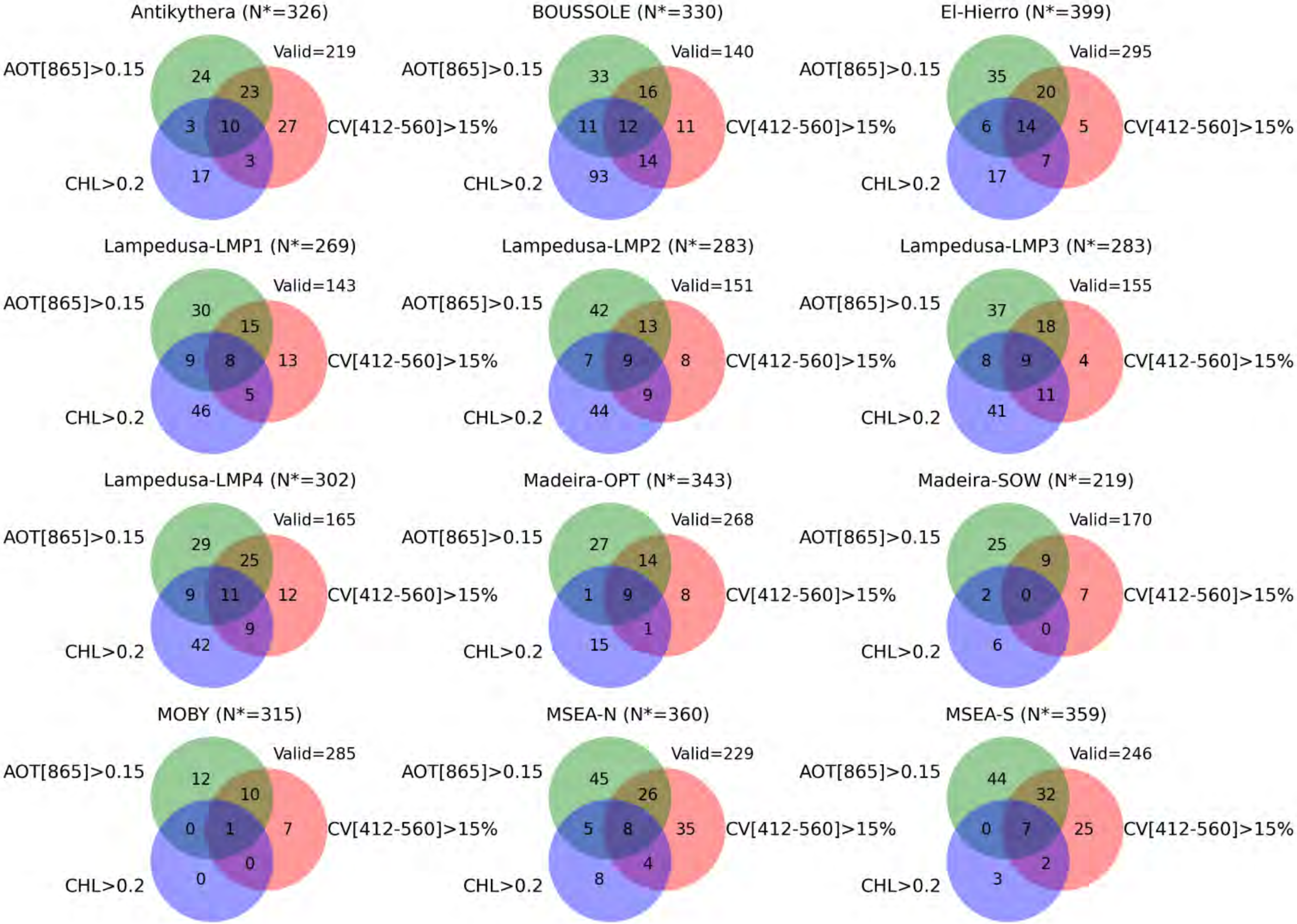


Cloudy = CLDICE
With glint = HIGLINT or MODGLINT
Absorbing aerosols = ABSAER

EUMETSAT

OLCI-A

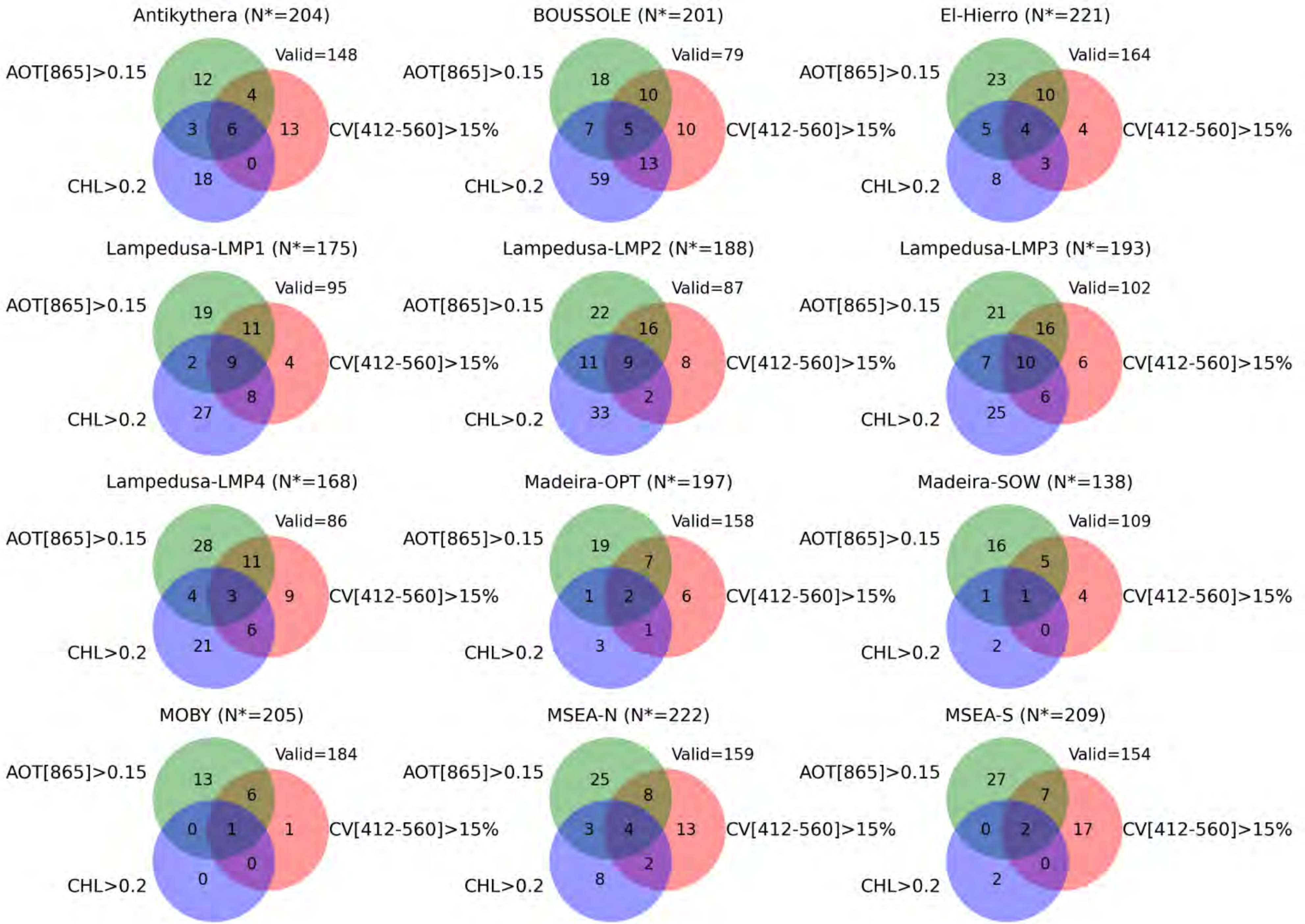
*N: total number of overpasses that passed other quality checks: SZA, OZA, Flags and all 5x5 pixels are valid



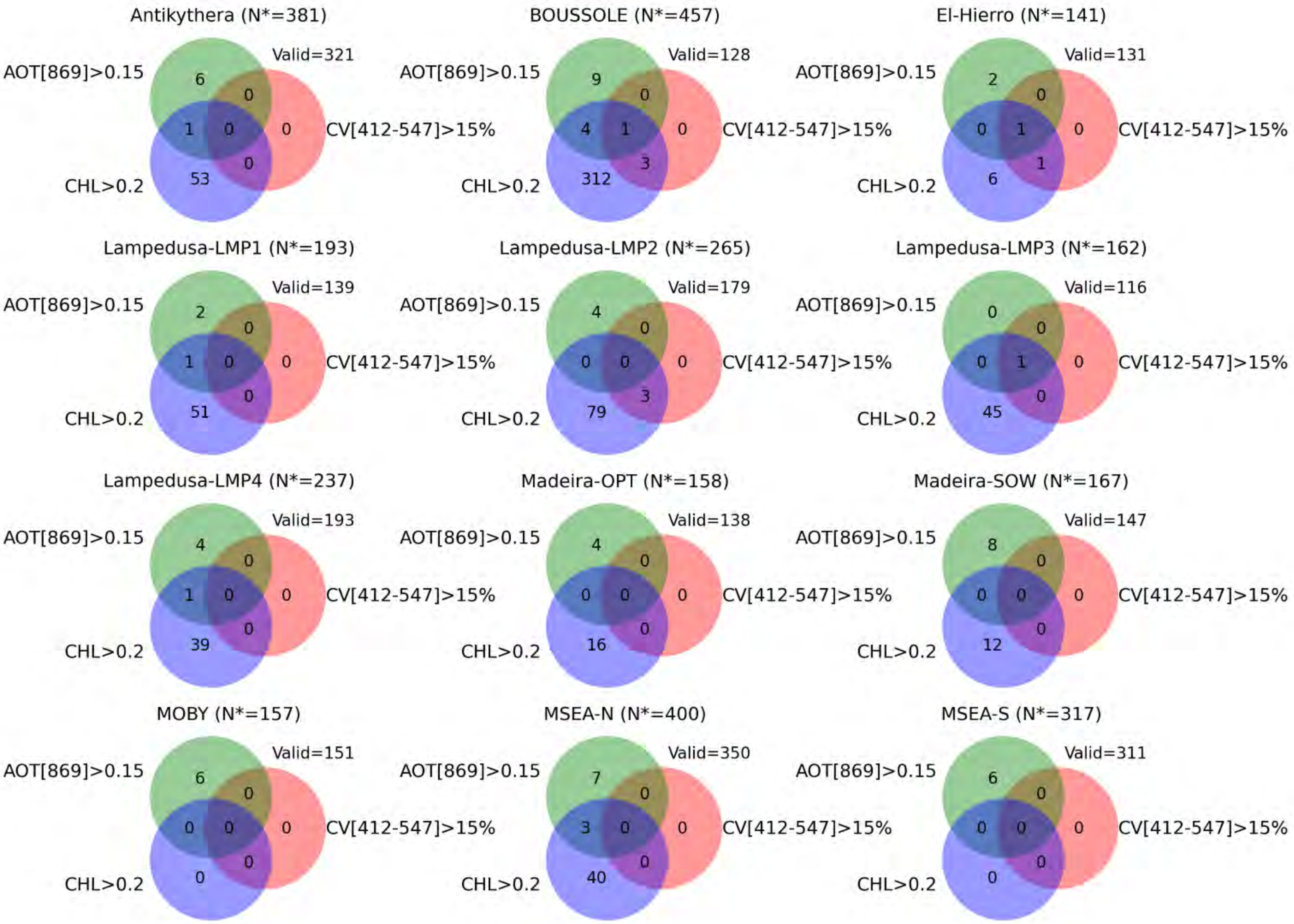
EUMETSAT

OLCI-B

*N: total number of overpasses that passed other quality checks: SZA, OZA, Flags and all 5x5 pixels are valid

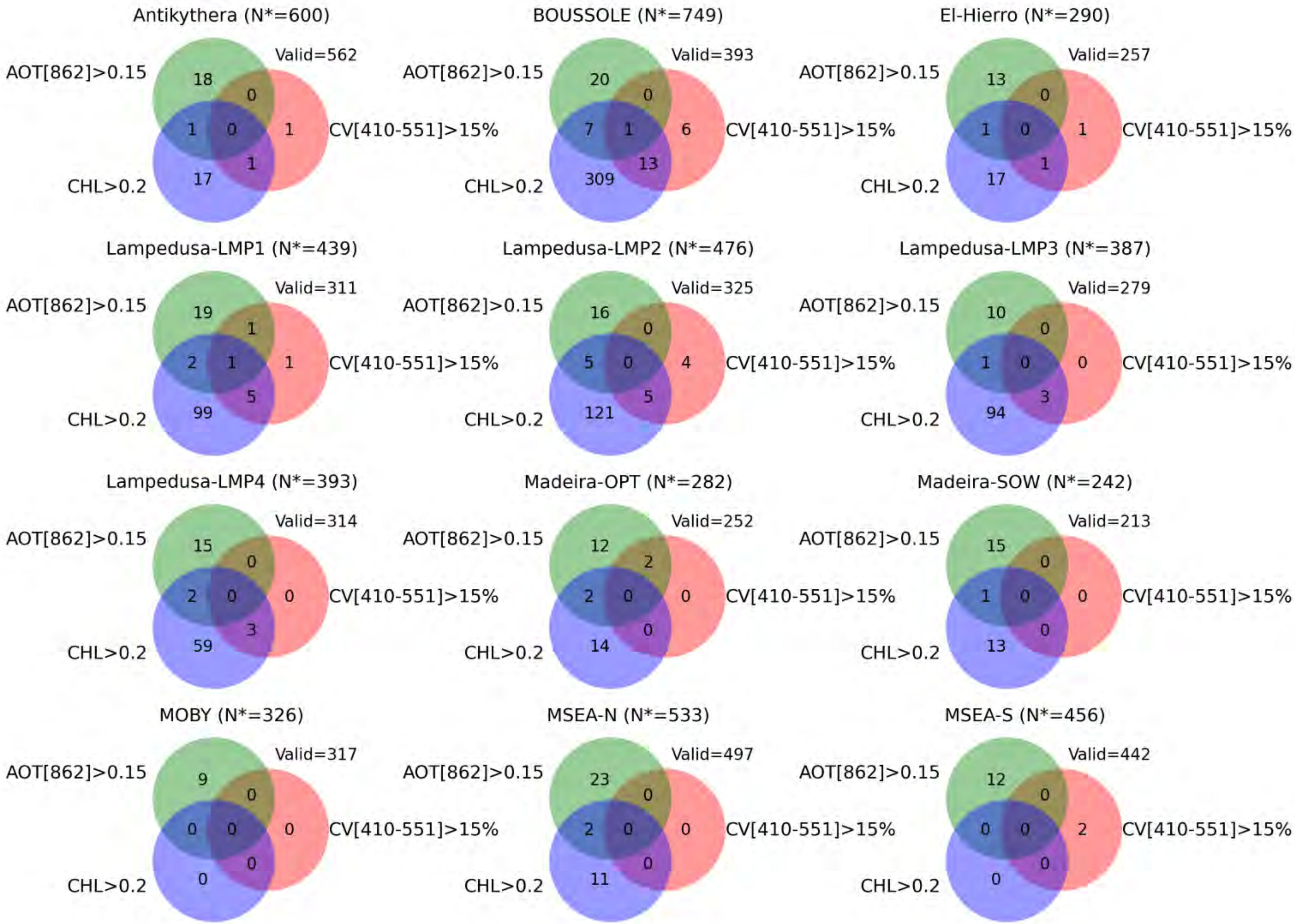


MODISA



*N: total number of overpasses that passed other quality checks: SZA, OZA, Flags and all 5x5 pixels are valid

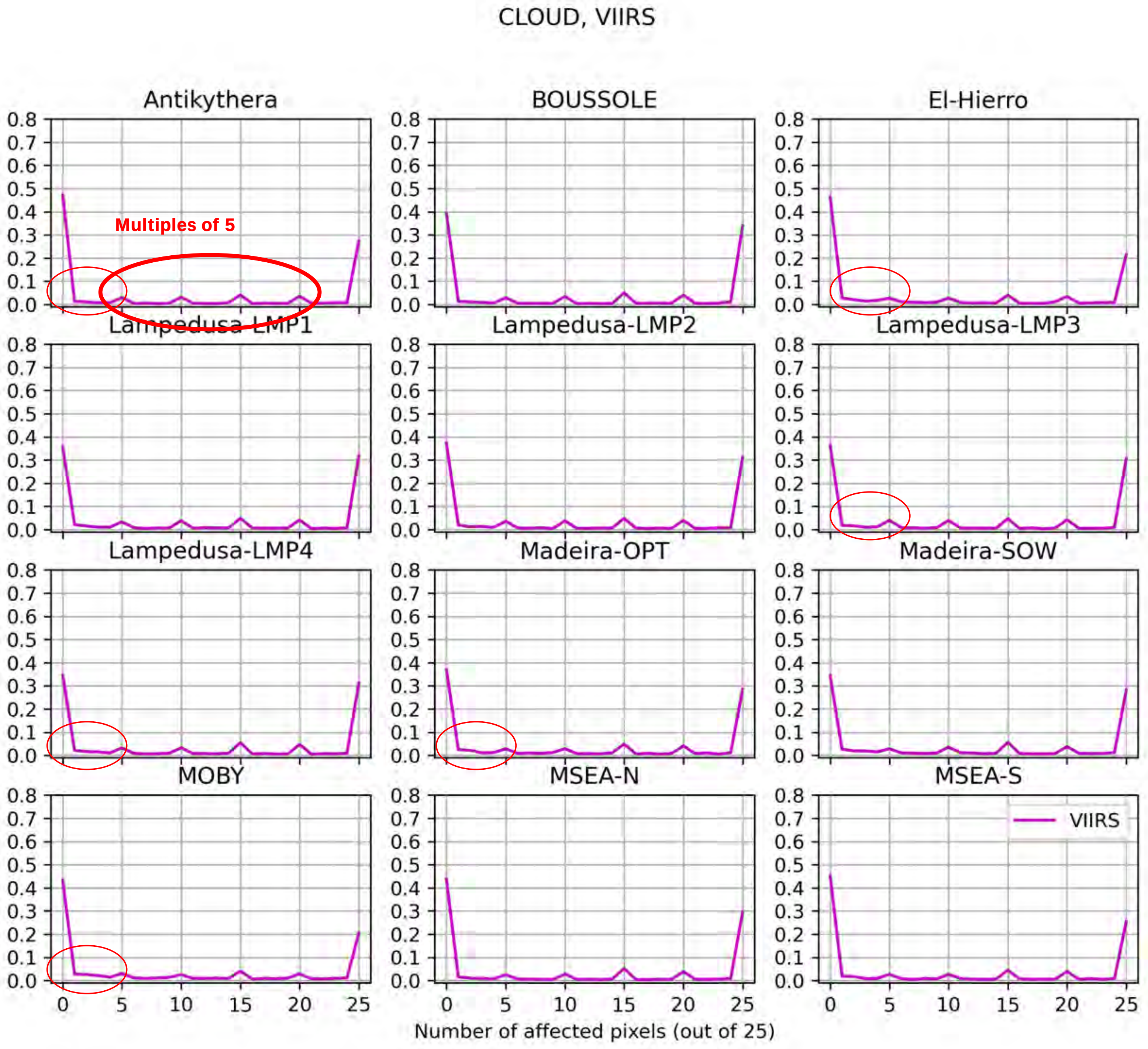
VSNPP



*N: total number of overpasses that passed other quality checks: SZA, OZA, Flags and all 5x5 pixels are valid

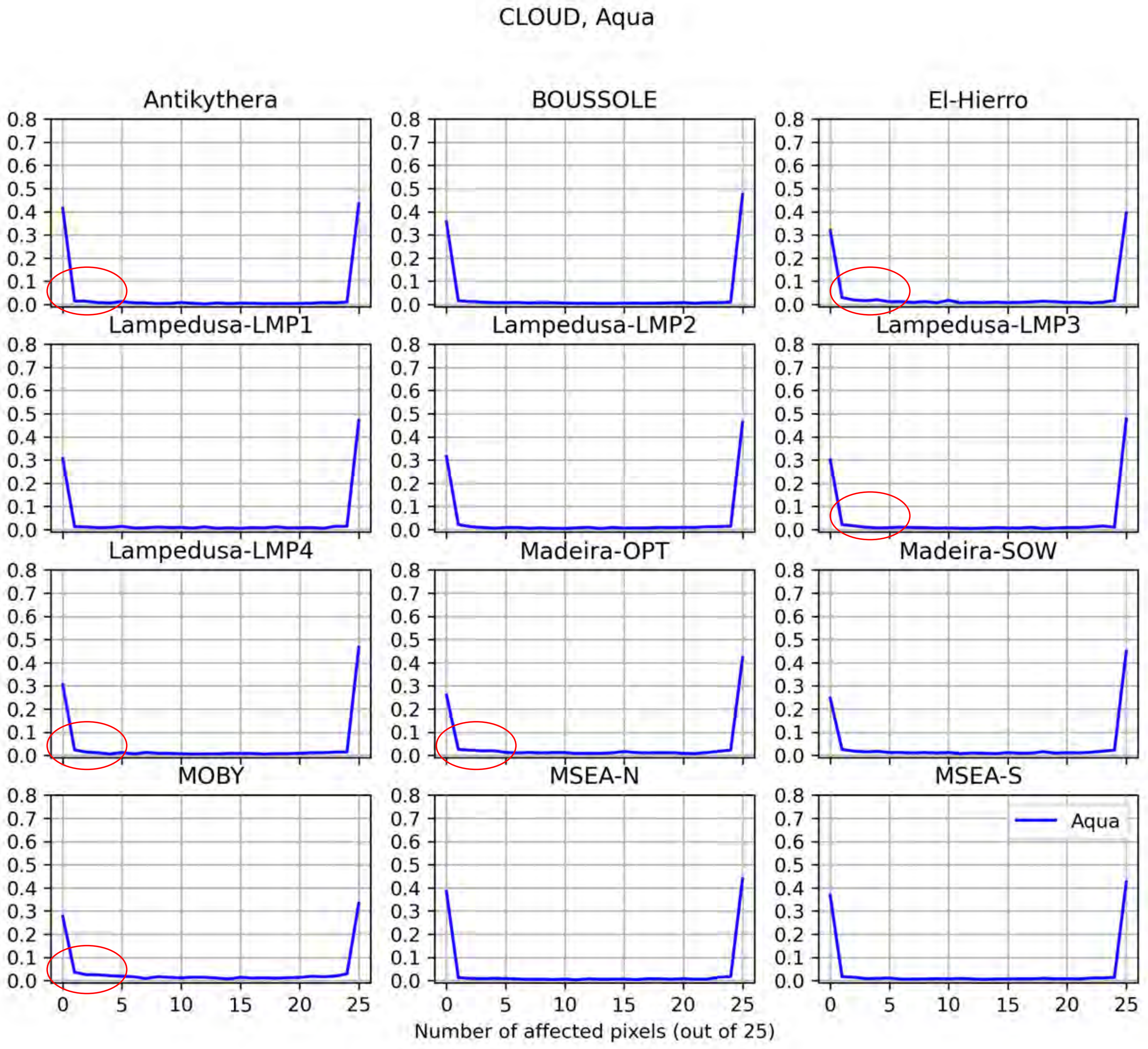
Number of pixels affected by clouds within each extraction (5x5)

- **Suomi-NPP VIIRS: BOW-TIE effect seems to produce lines of pixels flagged as CLOUDS (CLDICE)**
- **Peaks at multiples of 5 are not present in OLCI-A/B, MODIS**
- **More extractions affected by <5 cloudy pixels when compared to OLCI-A/B**
- **Likely related to a larger impact of scattered clouds at lower resolutions**

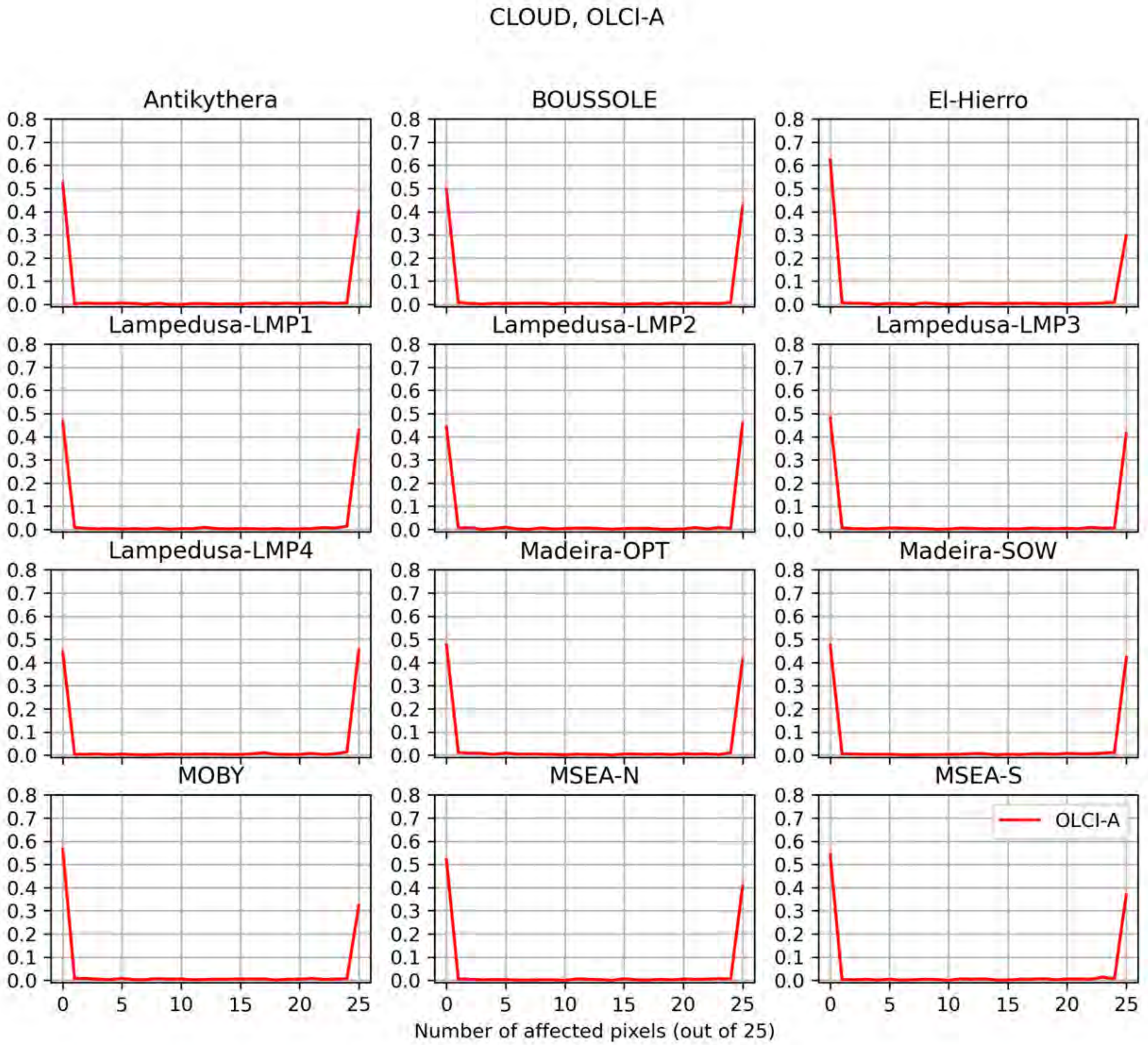


Number of pixels affected by clouds within each extraction (5x5)

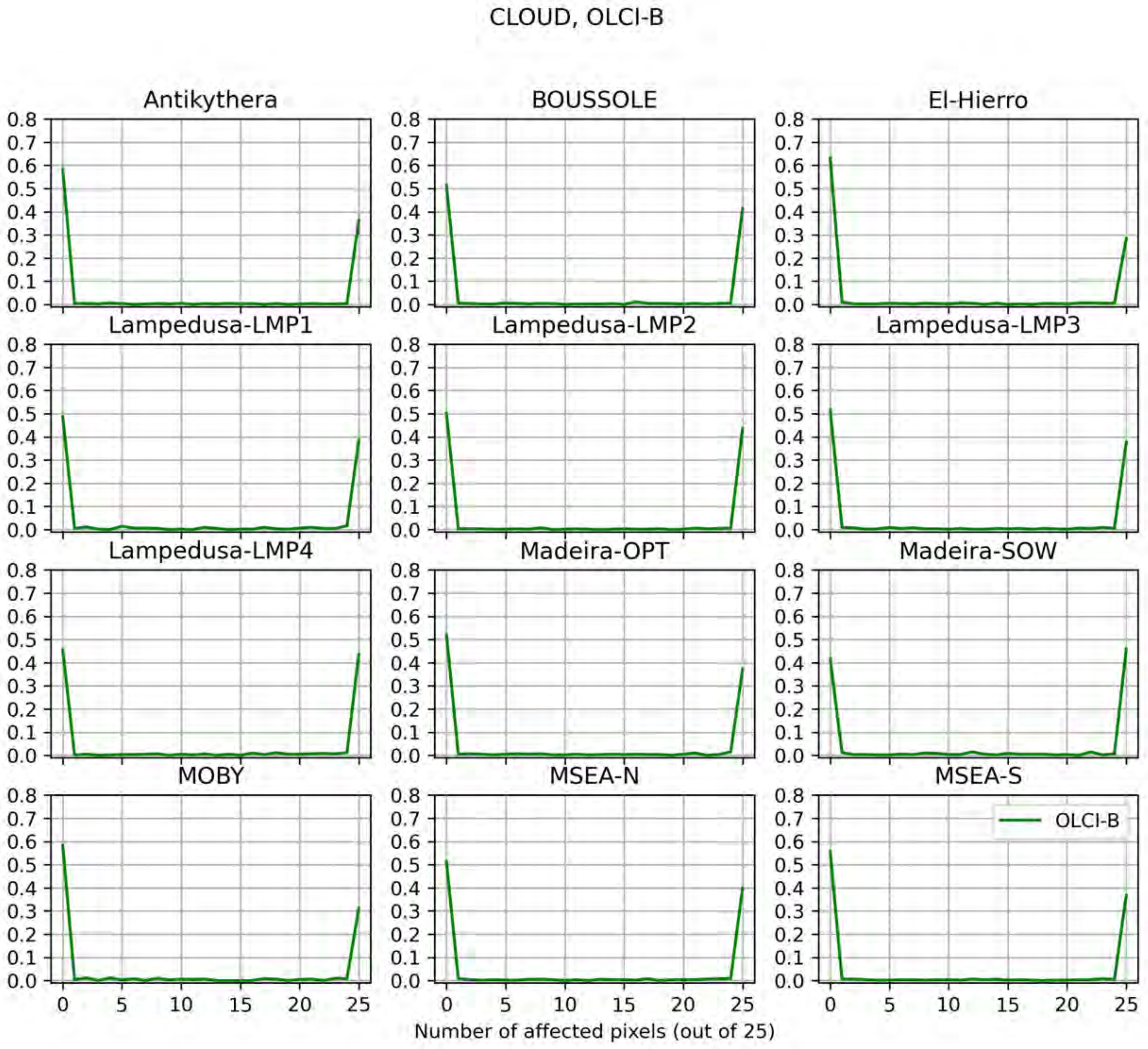
- **More extractions affected by <5 cloudy pixels when compared to OLCI-A/B**
- **Likely related to a larger impact of scattered clouds at lower resolutions**



Number of pixels affected by clouds within each extraction (5x5)

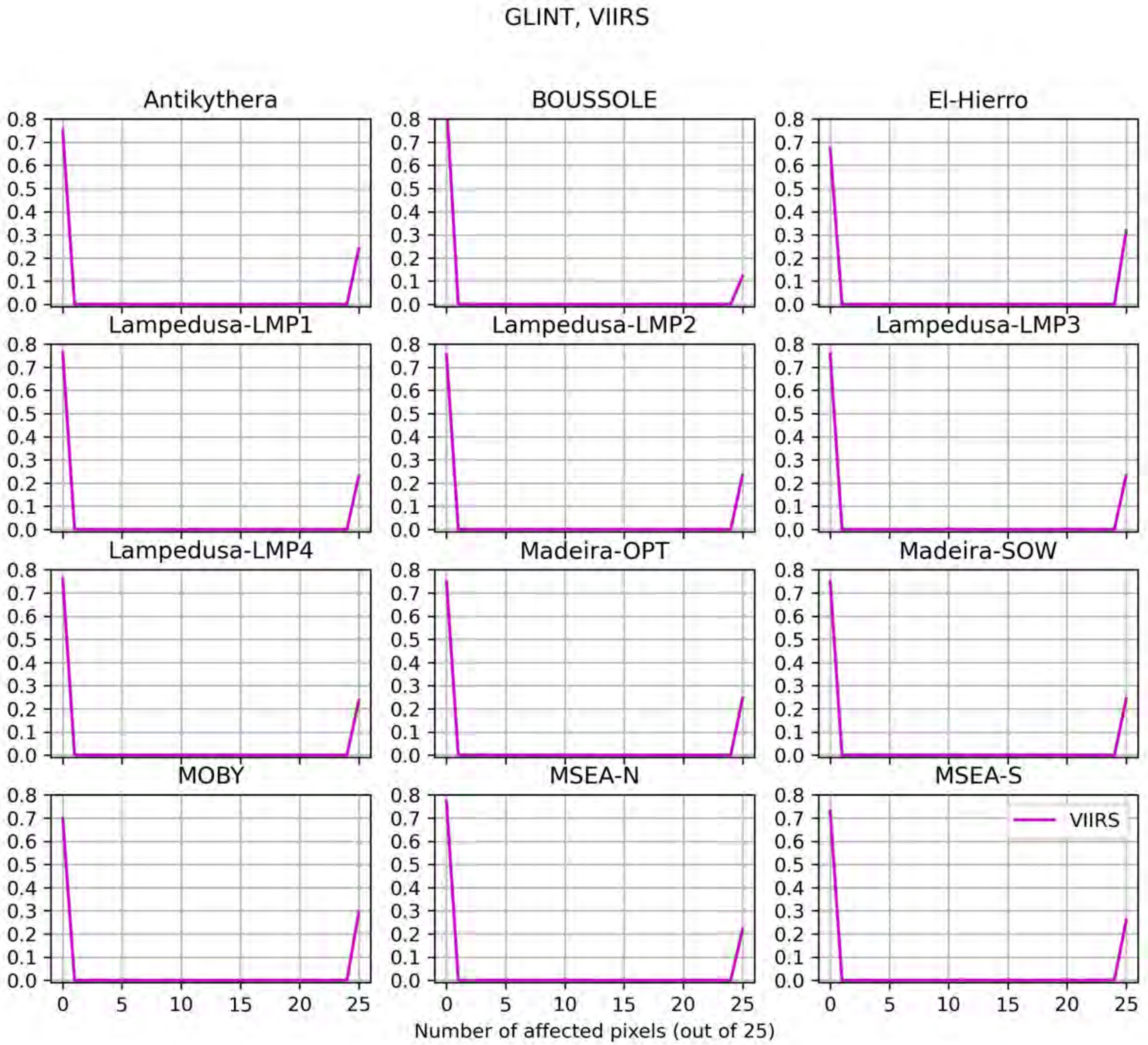


Number of pixels affected by clouds within each extraction (5x5)



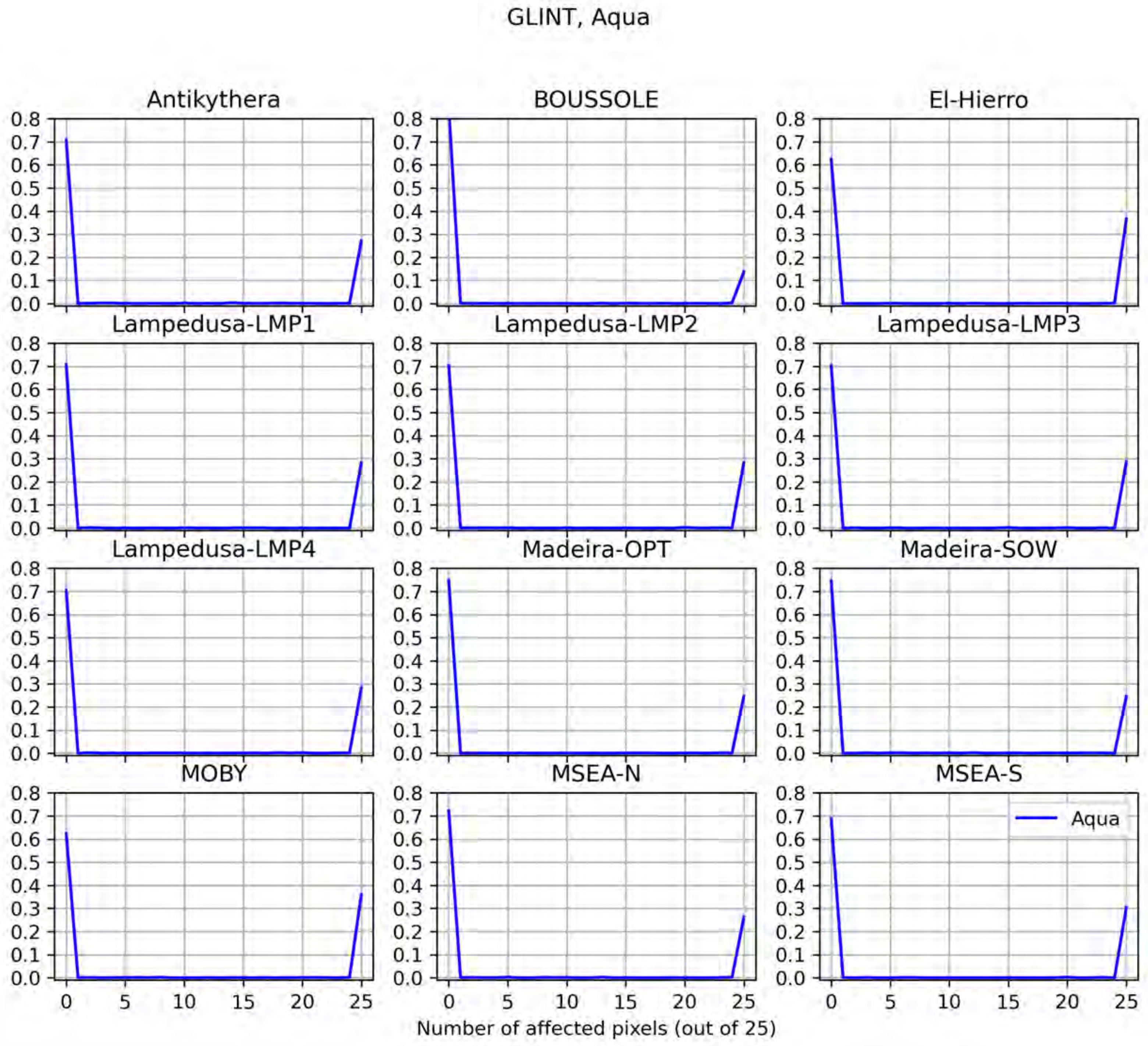
Number of pixels affected by glint within each extraction (5x5)

- **BOW TIE is not affecting the number of extractions affected by GLINT, since GLINT is mostly located in the center of the swath.**
- **Glint typically affects all or no pixels within the extraction windows**



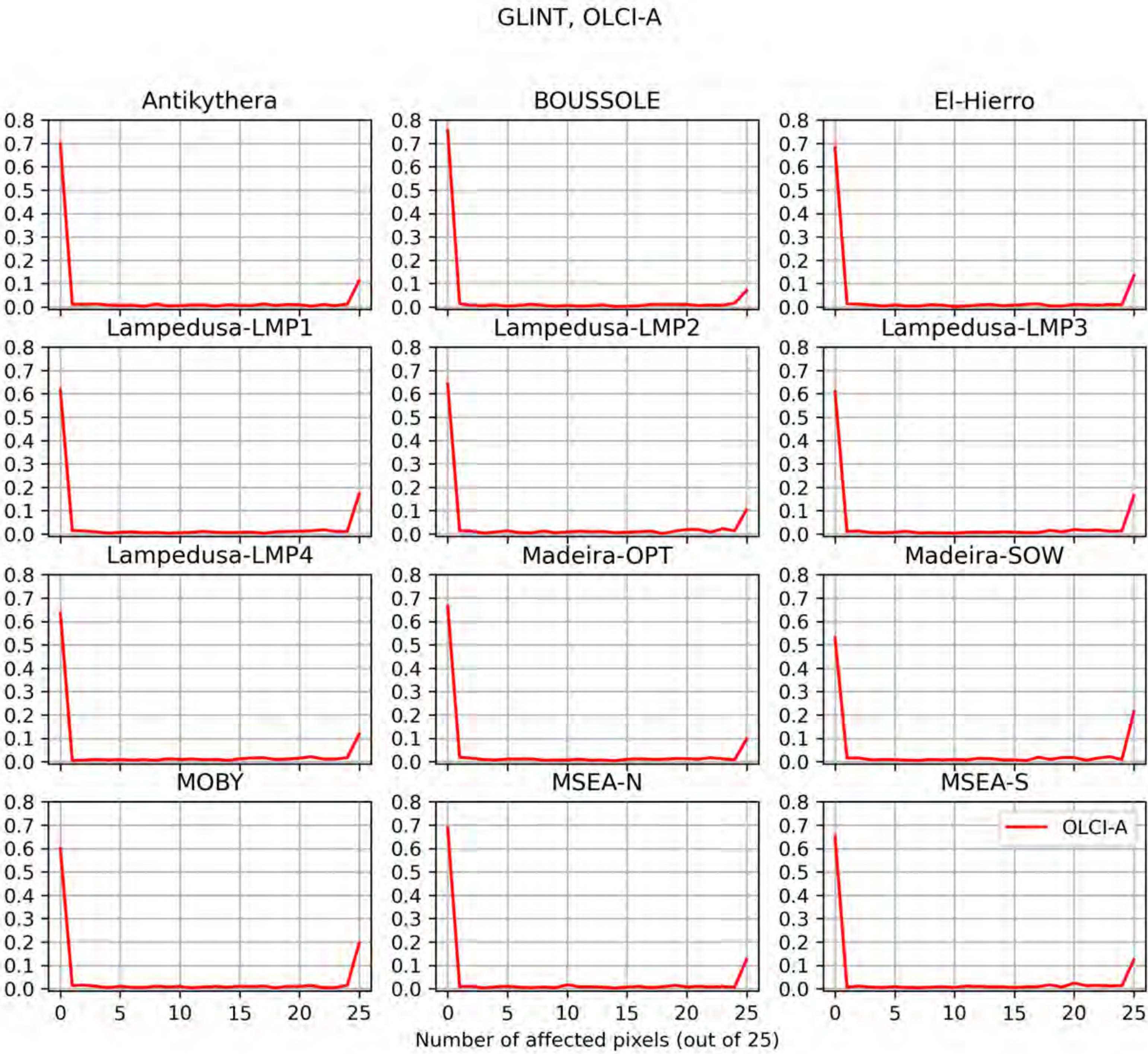
Number of pixels affected by glint within each extraction (5x5)

- **Glint typically affects all or no pixels within the extraction windows**



Number of pixels affected by glint within each extraction (5x5)

- **Glint typically affects all or no pixels within the extraction windows**



Number of pixels affected by glint within each extraction (5x5)

- **Glint typically affects all or no pixels within the extraction windows**