30 YEARS 1986-2016

EUMETSAT

CURRENT STATUS OF EUMETSAT OPERATIONAL WINDS

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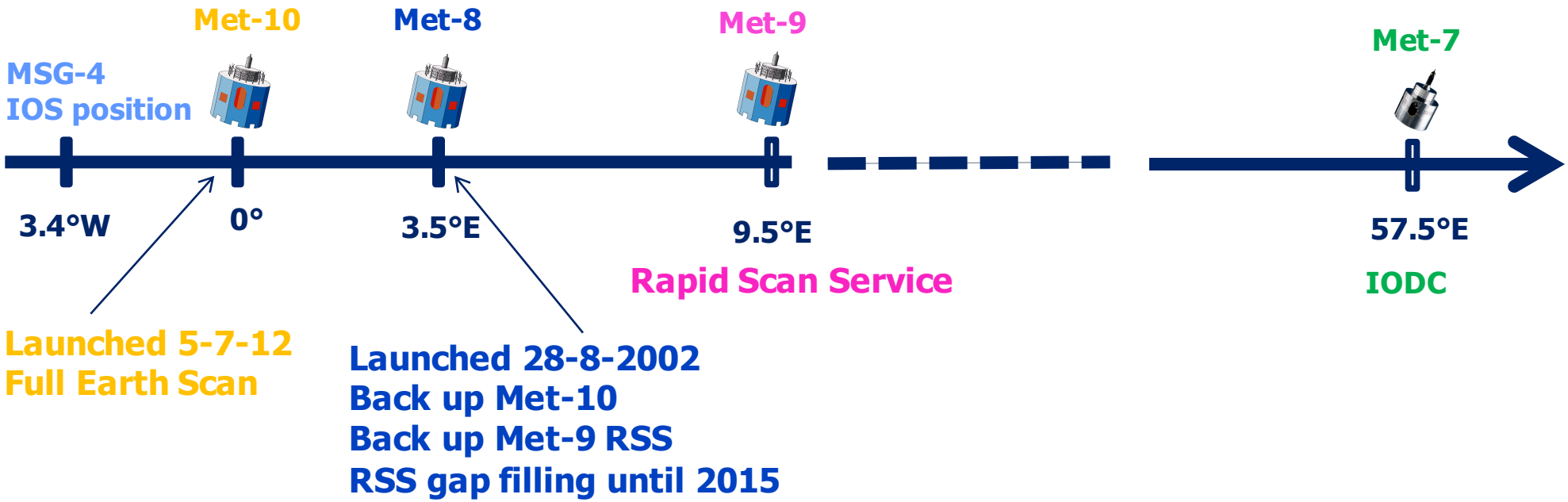
Content

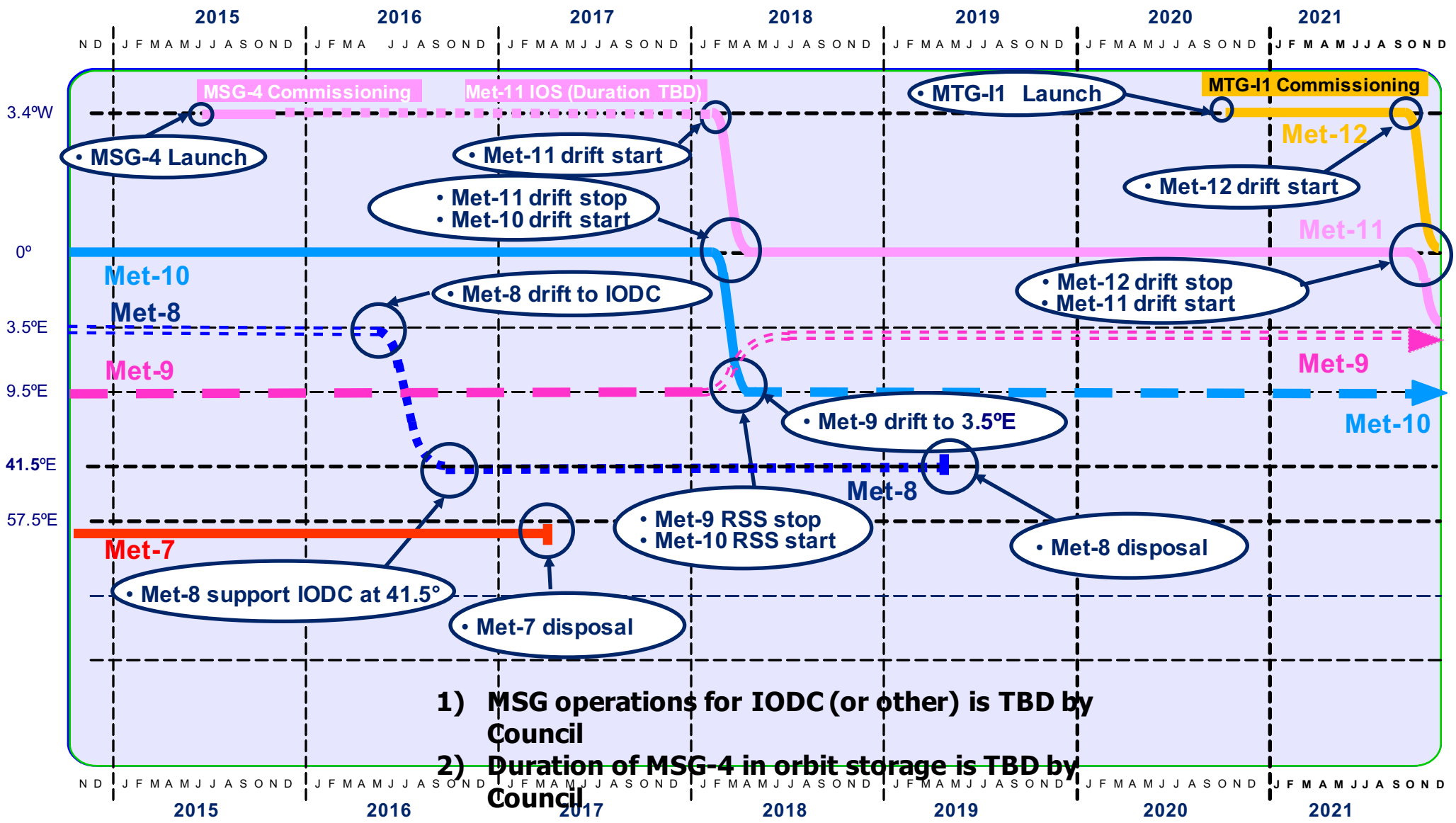
- ✓ AMVs from Geostationary Satellite status
  - MTP/MSG Planning
  - Major evolutions impacting AMVs since IWW12
  - Upcoming Changes
- ✓ AMVs from Low earth Orbiting Systems status
  - Metop planning
  - AVHRR Winds
  - Upcoming Changes
- ✓ Other business

MSG space segment configuration

MSG space segment configuration is stable since the end of re-locations and services swaps in early 2013.



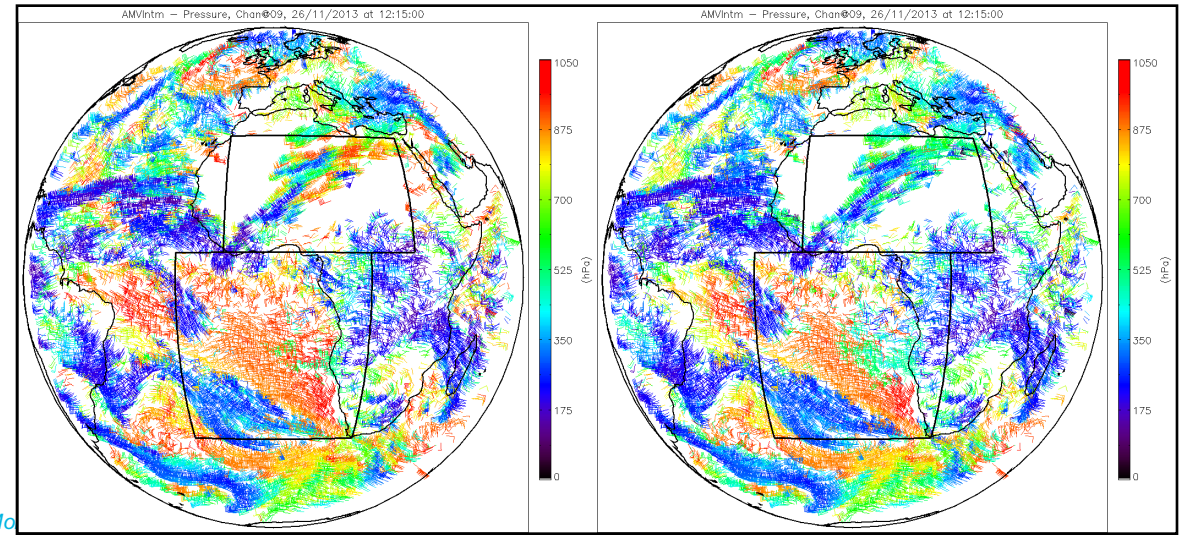
Long Term Planning Reference Baseline - 2015



Recent activities. MPEF Release 2.2

- Use of Optimum Cloud Analysis (OCA) product for AMV HA. Saved as additional height in the output file.

1. whole disk	**CLA**	**OCA**	**DIFF**
Mean pressure	548.33	513.49	-34.84
Mean QI with FC	69.69	71.77	+2.08
Mean QI without FC	73.95	76.65	+2.69
2. Central inversion area (lat. [-35º,5º], lon. [-20º,20º])			
Mean pressure	619.55	582.51	-37.04
Mean QI with FC	72.90	74.52	+1.62
Mean QI without FC	77.63	79.37	+1.74
3. Jet area (lat. [5º,30º], lon. [-10º,30º])			
Mean pressure	525.44	413.69	-111.75
Mean QI with FC	51.57	64.33	+12.76
Mean QI without FC	55.68	71.47	+15.79



AMV Intermediate Product: CLA vs. OCA, 26 November 2013, 12:15

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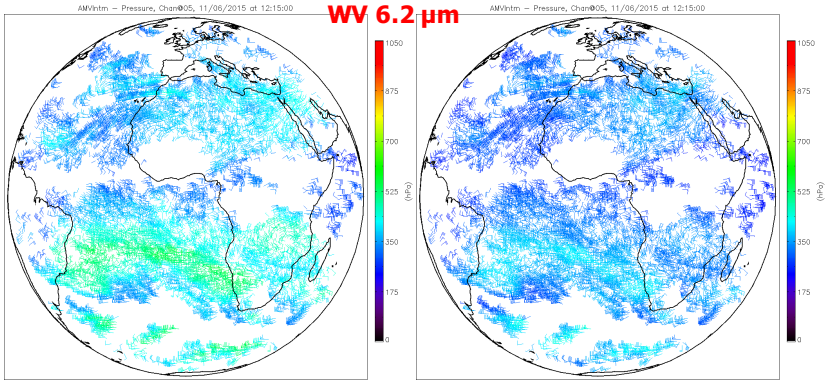
Recent activities. MPEF Release 2.2

- HA of Water Vapour AMVs
  - ✓ New HA method for WV clear sky AMVs
  - ✓ Correction of Low levels Cloudy WV winds

Channel	Number	Clear-sky		
		OLD	NEW	NEW – OLD
WV 6.2 µm	7,640	36.6	46.4	+9.8
WV 7.3 µm	7,730	30.1	51.5	+21.4

Channel	Number	Cloudy		
		OLD	NEW	NEW – OLD
WV 6.2 µm	690	1.9	65.5	+63.6
WV 7.3 µm	30	4.0	69.7	+65.7



Former New

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Recent activities. MTG Prototype

- Commissioning of Meteosat 11

- MTG prototype developed from MSG code
  - ✓ 3 images, No averaging
  - ✓ Use OCA as HA baseline.
  - ✓ MTG prototype adapted to Himawari data.

  See Manuel's talk, this session: 'Generation of Himawari-8 AMVs using the future MTG AMV processor.'

- Nested tracking implemented on our test chain (Collaboration with J. Daniels and W. Bresky).
  - ✓ Run using several target sizes configurations.
  - ✓ Comparison against MSG algorithm on 5 days period.

Future activities.

- Operations
  - ✓ Met 8 over IODC (autumn 2016)

- MTG prototype
  - ✓ Comparison of MSG and MTG codes performances
  - ✓ MTG prototype to be adpated to MET8 RSS data (L2PF activities)
  - ✓ Use OCA microphysics to improve AMV HA.
  - ✓ Compare MTG prototype to GeoKompsat prototype using Himawari data (Collaboration with KMA)
  - ✓ Participation to 3rd AMV intercomparison study.

Current Status of Metop Satellites

- The Metop-A satellite continues to be a valuable component of the EUMETSAT Polar System despite some instrument degradations.
- The Dual - Metop configuration gives robustness to the core service.

	Metop-A	Metop-B
SVM		
PLM	HRPT not global	
IASI	Concern over magnets lifetime. Electronics Side B due to CC speed flags.	Concern over magnets lifetime
GOME	Swath 960km, UV Throughput	Swath 1920km, UV Throughput
GRAS	Improved Performance	Improved Performance
ASCAT		
MHS	H3 & 4 Improved Performance	
AMSUs	H3,7, 8 not usable: No ATOVS L2	
AVHRR		
HIRS	Ageing effects apparent.	LW channels cyclic degradation
SEM		
S&R		CRA Problem
ADCS	ARGOS-3 Service	CRA Problem: ARGOS-2 only

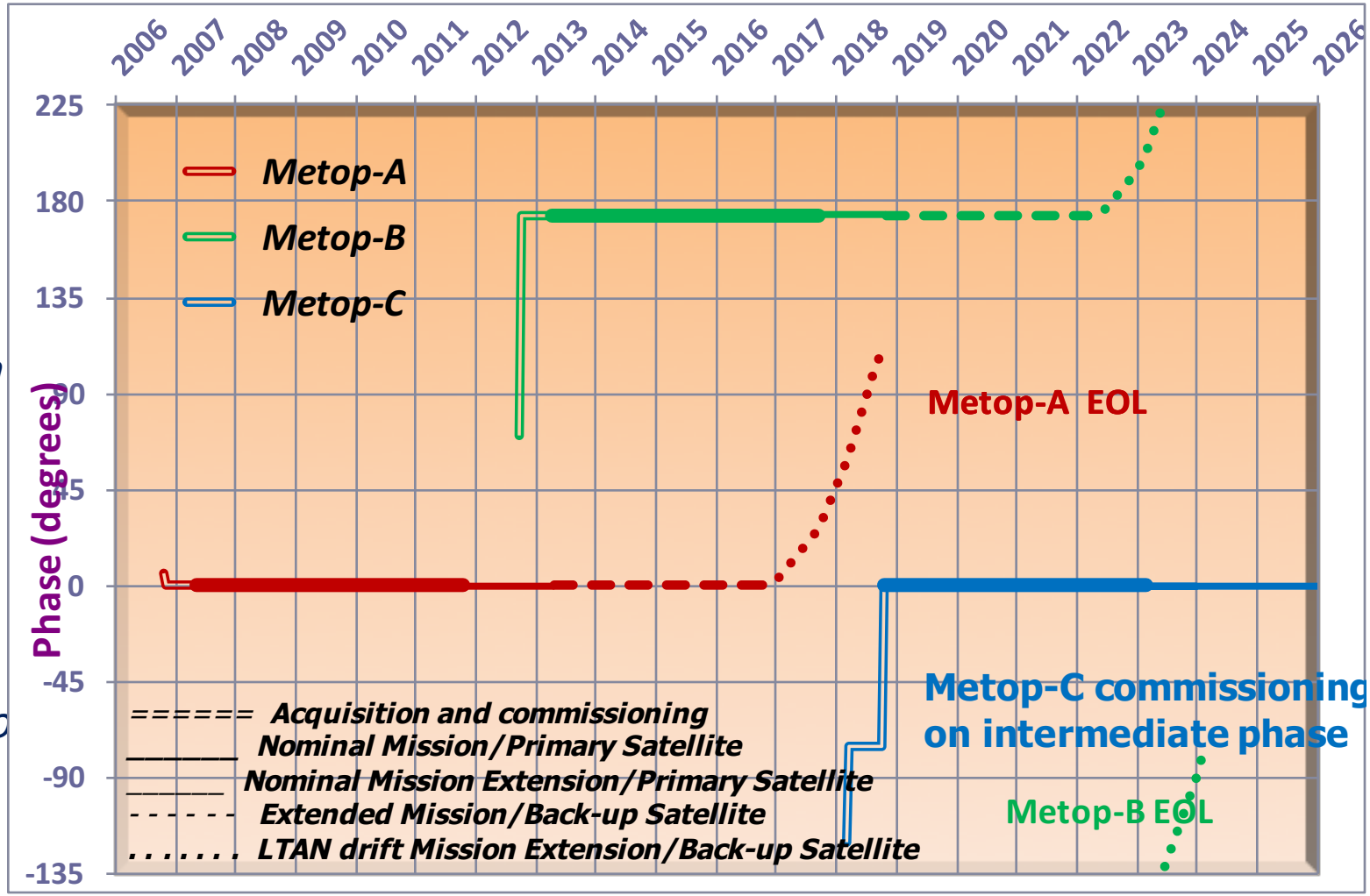
Baseline EPS-Metop Orbit Position Planning (Fixed GT)

Council (Q4 2012) agreed lifetime extension planning:

- *Last OOP in 2015*
- *Drift until at least mid-2018*
- *De-orbit within 25 years (compliant with ISO 24113)*

- *Based on Metop-C Launch in Q1 2018*

30 mins LTAN drift with fixed GT leads to phase drift. 20 mins AOS to AOS separation maintained



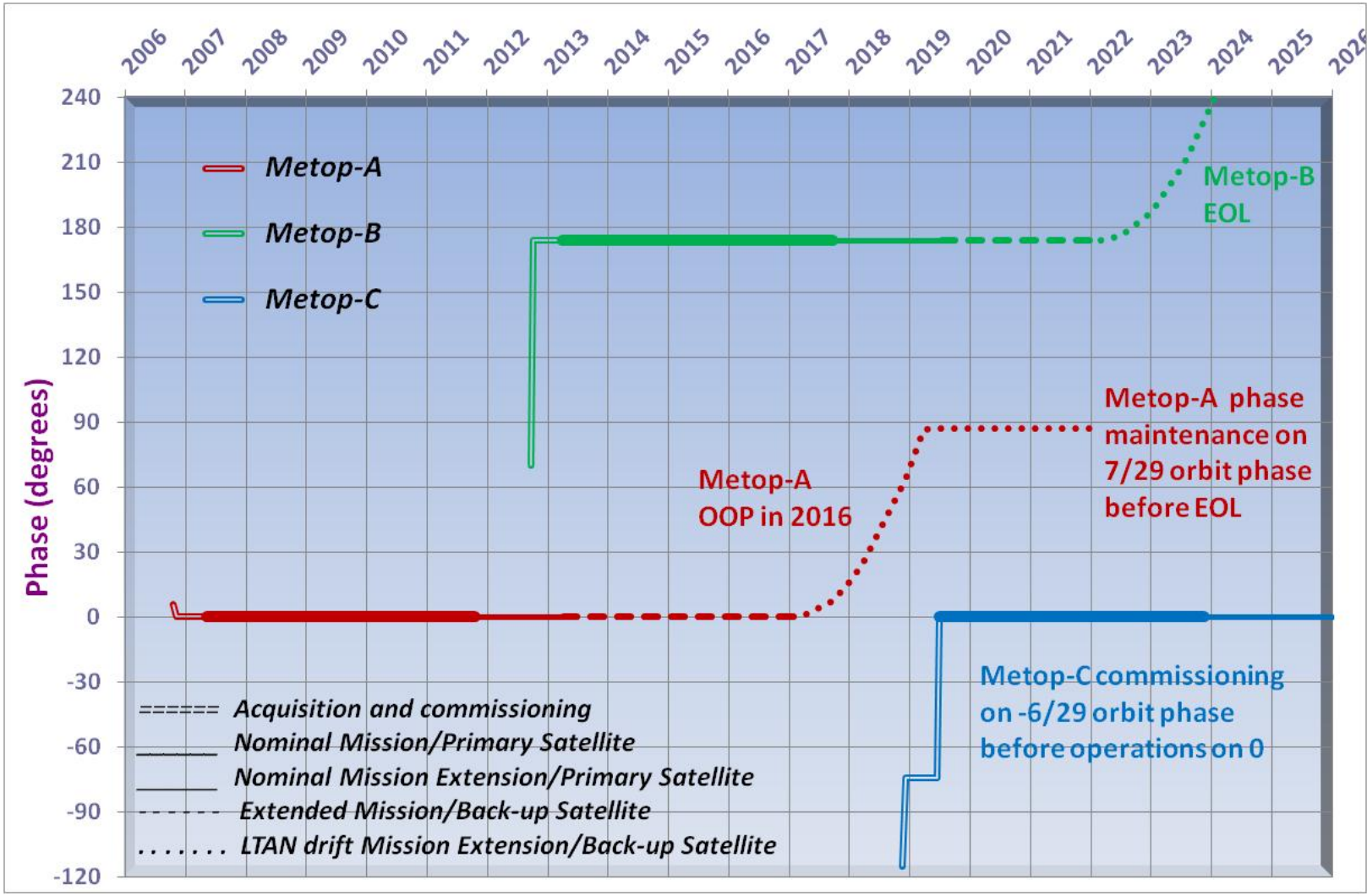
EPS-Metop Orbit Position Option: 2016 OOP with LTAN mission extension

Chart assumes last OOP Manoeuvre in Autumn 2016

The single burn gains 5 months on the nominal fixed Ground Track.

Phase drift is stopped, with ground track drift to ensure at least 20 minutes AOS separation is available between Metop-A and Metop-C.

Commissioning of Metop-C at a different phase position to routine operations.



Recent activities on AVHRR winds.

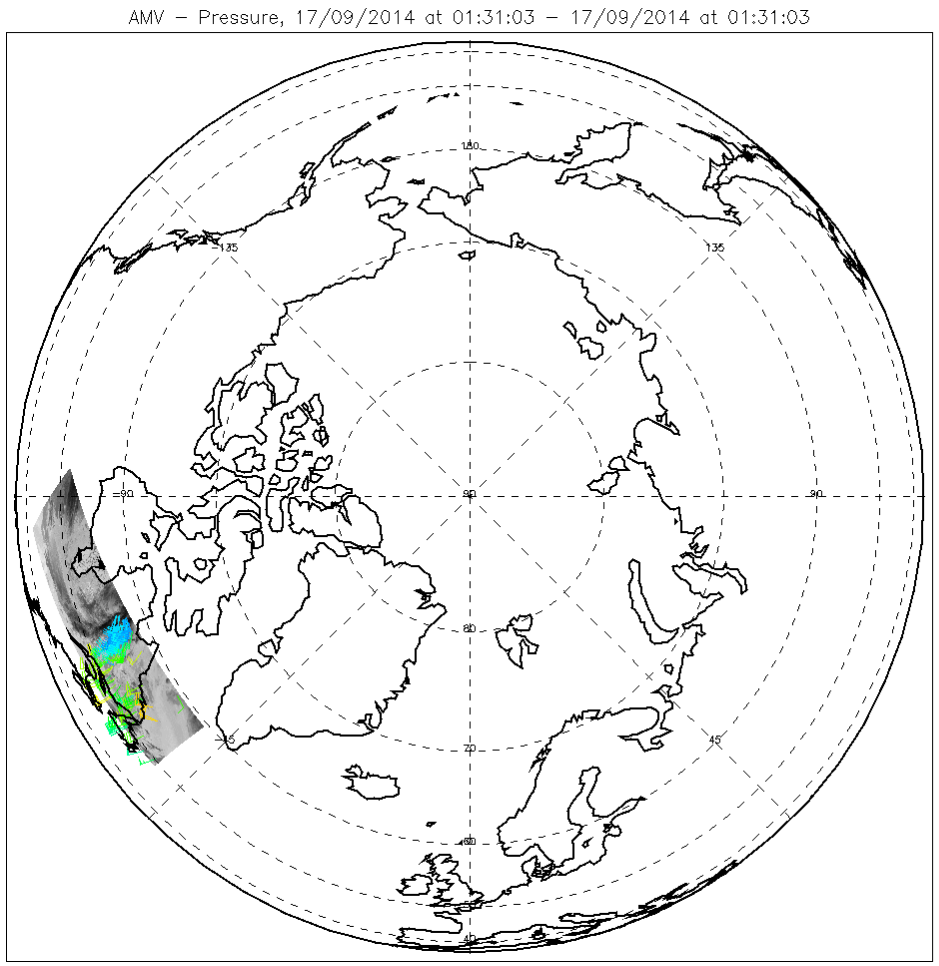
- Development of Global AVHRR wind product.
- Development of Triplet mode AVHRR wind product over polar regions.

See Olivier's talk, this session: 'Derivation of wind vectors from Metop AVHRR at EUMETSAT.'

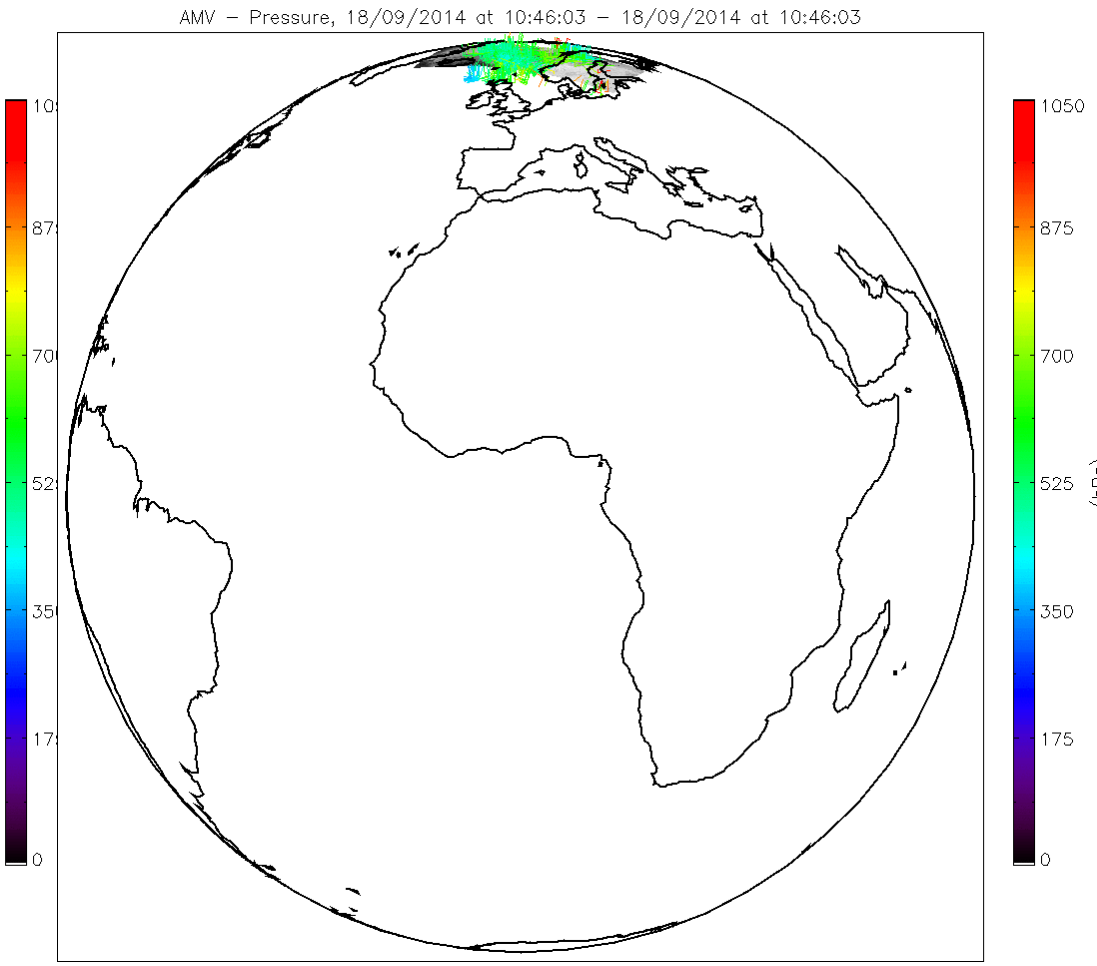
AVHRR wind products	*Number of satellite used*	*Number of images used*	*Time to derive the product (~min)*	*Coverage*
Single Metop polar	1	2	100	Polar areas
Global AVHRR	2	2	50	Global
Triplet mode	2	3	100	Polar areas

AVHRR winds Examples

Single Metop polar, 17/09/2014, 1:31-1:52



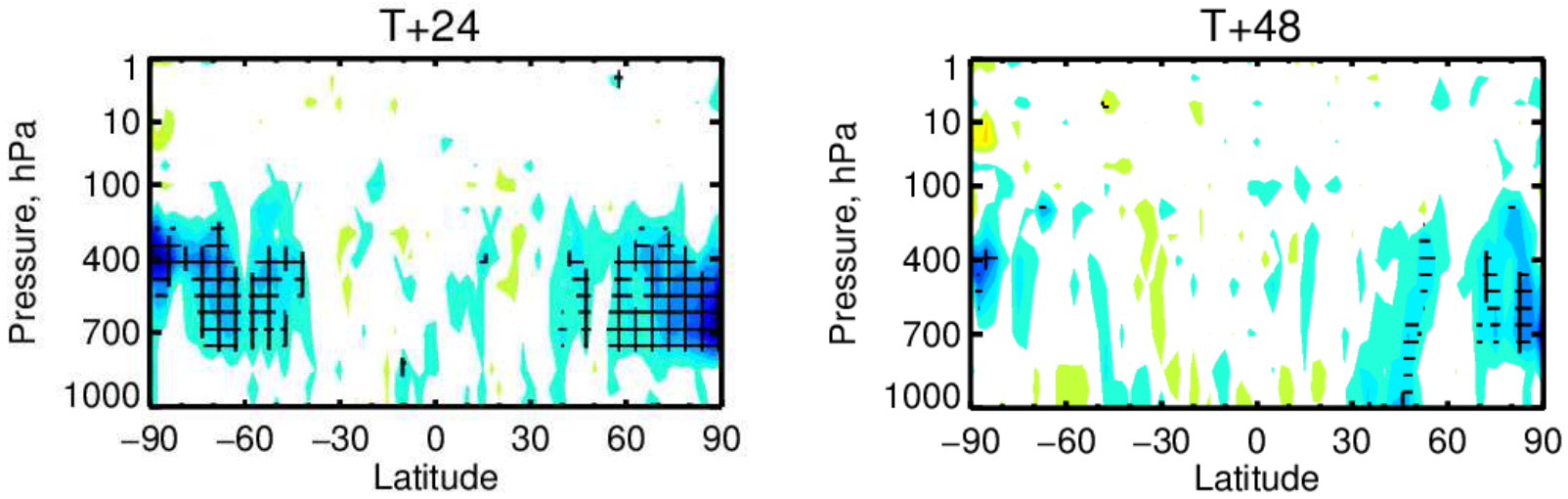
Global AVHRR , 18/09/2014, 9:04-9:46



EUMETSAT AVHRR winds in NWP models ☺

- Single AVHRR wind product assimilated at Met Office (Feb 2015) and ECMWF (Feb 2016). Lat>60°
- Global AVHRR wind product assimilated at ECMWF (Feb 2016). 40°<Lat<60°.

Courtesy K. Salonen an N. Bormann: Atmospheric Motion Vector observations in the ECMWF system: Fifth year report



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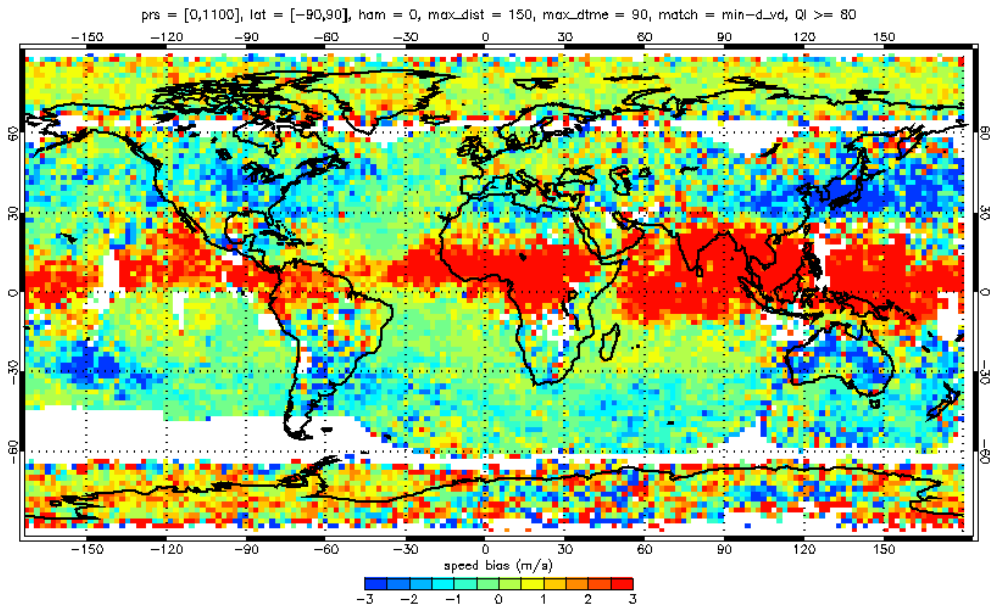
Other recent activities on AVHRR winds.

- Investigation of Metop A end of life scenario on wind products.

- External study on comparison of AVHRR wind products (TROPOS)

  See A. Horvath's poster: 'Evaluation of dual-mode METOP CMVs.'



Courtesy A. Horvath
Geographic distribution of METOP wind speed bias averaged over all levels. All comparison CMVs are from CIMSS. Geostationary: GOES-15/13, METEOSAT-10/7, MTSAT-2 and polar: MODIS-Terra.

Future activities on LEO satellites.

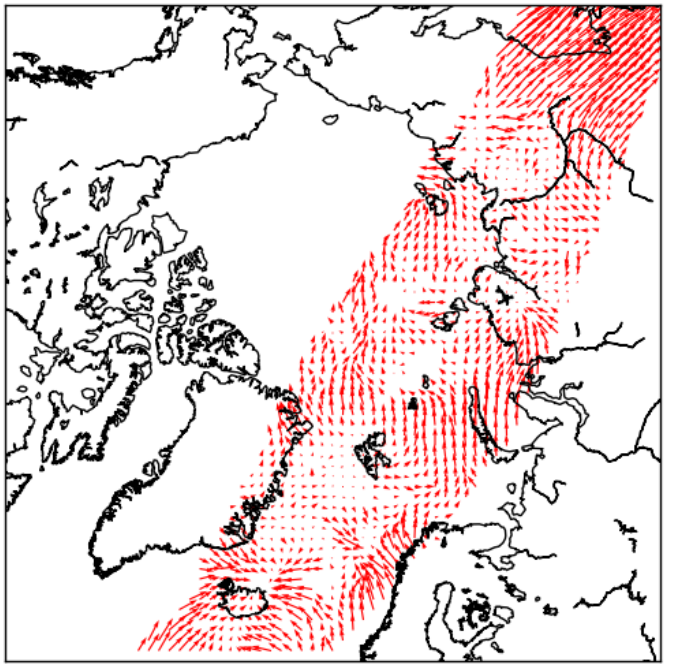
- Operations
  - ✓ End of life of Metop A
  - ✓ Commissioning of Metop-C (2018)
- AVHRR wind products
  - ✓ Extension of AVHRR triplet mode coverage setting the 2nd image as reference (Q4 2016)
- EPS-SG METImage wind products
  - ✓ Documentation updates (ATBD and PGS)
  - ✓ Start development of METImage AMV prototype code

Other recent activities.

- Development of 3D wind product from IASI Level2 temperature and humidity fields.

  - ✓ Collaboration with P. Héas from INRIA (Rennes in France)
  - ✓ Use 3D optical flow software
  - ✓ Proof of concept tested on fo L2 product s

See Olivier's talk, session 7: 'E IASI level 2 products.' (Thur



Other business future activities.

- Development of 3D wind product from IASI Level2 temperature and humidity fields.
  - ✓ Get consolidated results by end 2016
  - ✓ Decision to implement this algorithm or not on operation in 2017
- Investigate AMV extraction from Sentinel 3 SLSTR instrument.
  - ✓ Strategy under investigation.
- ITT on the investigation of recurrent AMV fast biase over tropics.
  - ✓ Presently on EUMITS.

Thanks for attention