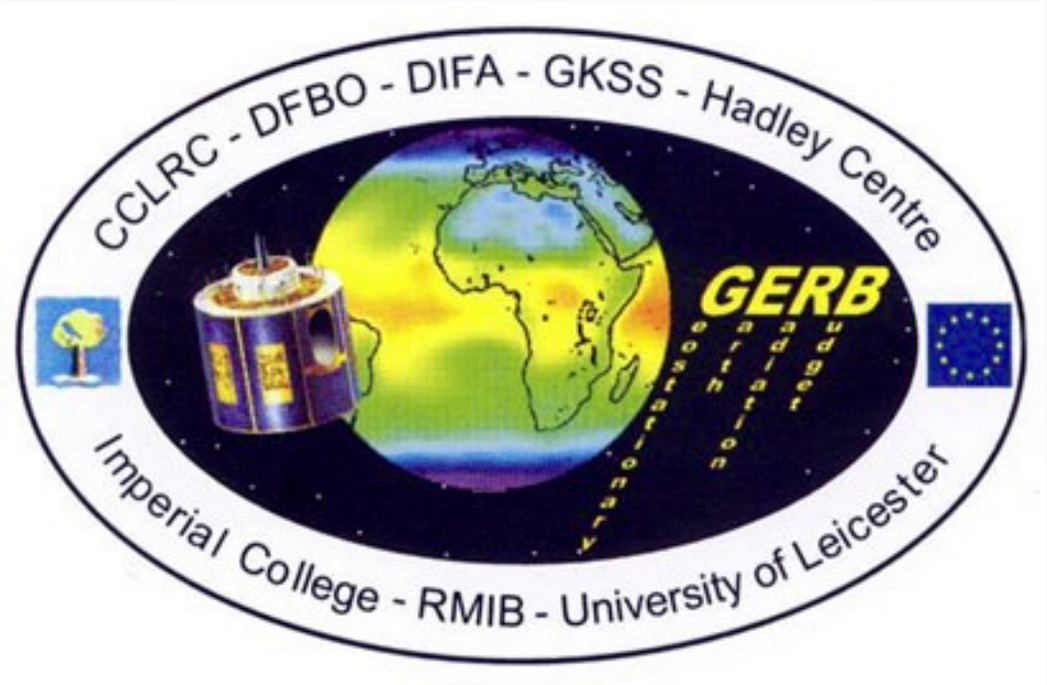


RMI

RGP Status Report

2018 Earth Radiation Budget Workshop
10–14 September 2018
NCAR, Boulder CO, USA

Current status (2016–2018)

- Staff overview
- Hardware overview
- RGP NRT and reprocessing flowcharts
- HDF5 version compatibility

RMI

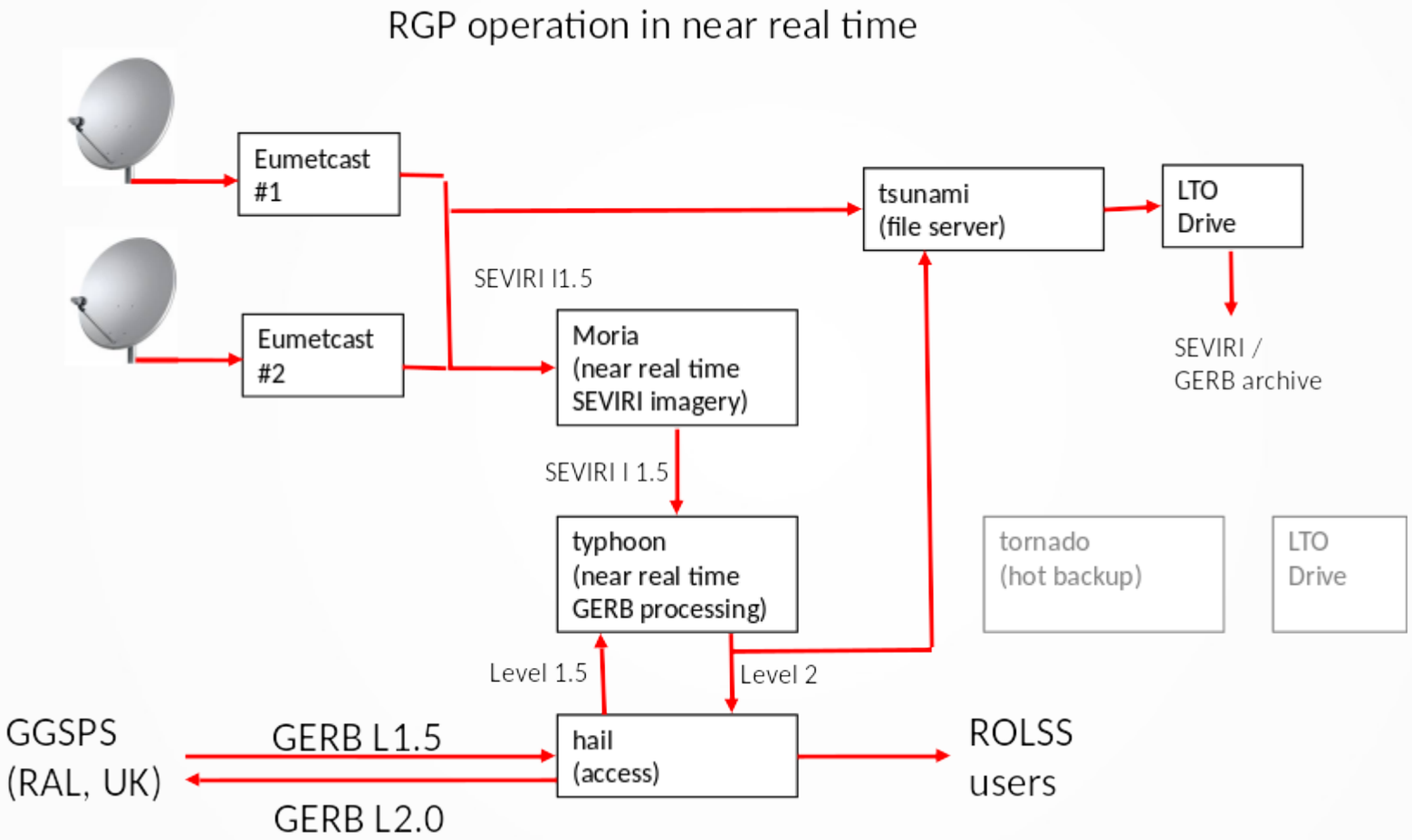
Staff overview

- Edward Baudrez: Edition 1
- Alessandro Ipe: IT and Edition 2
- Johan Moreels: IT and Operational
- Co-starring: Tom Akkermans (CM SAF), William Moutier (CM SAF), Almudena Velázquez-Blázquez (ESA EarthCARE)
- Management: Nicolas Clerbaux, Steven Dewitte
- Alessandro is leaving RMIB on 1st of December

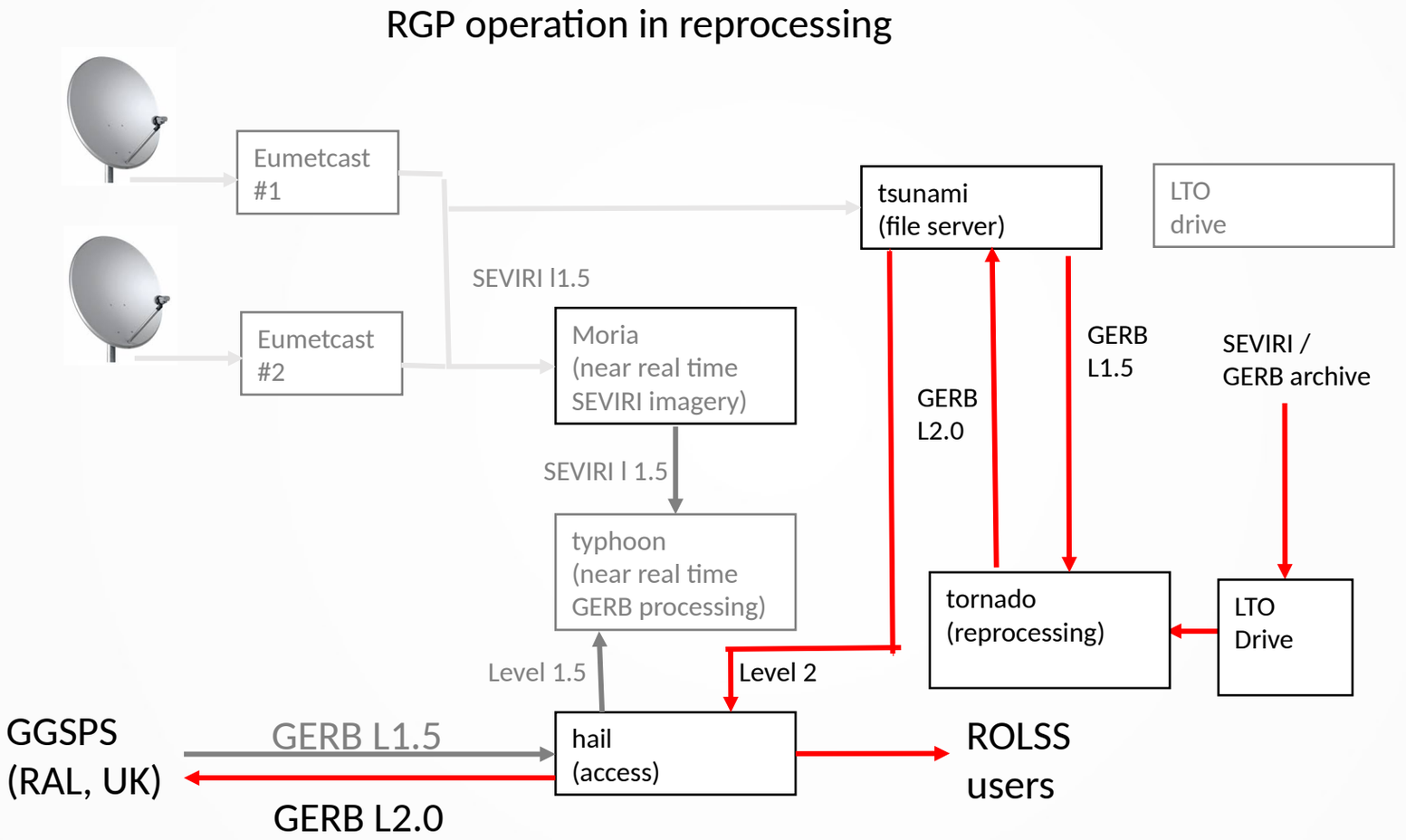
Hardware overview

- Replacement of older hardware ongoing
  - hard disks and hard disk controllers in main file server
  - NRT processing server: not yet in place
- Procurement of a backup file server (Synology NAS)
- Major problem with file system integrity on main file server (GlusterFS)
- Desktop machines of team members to be updated before the end of the year (openSUSE Leap 15.0; ships with HDF5 1.10.1 and netCDF 4.6.1 by default)

RGP NRT processing overview



RGP reprocessing overview



HDF5 version compatibility

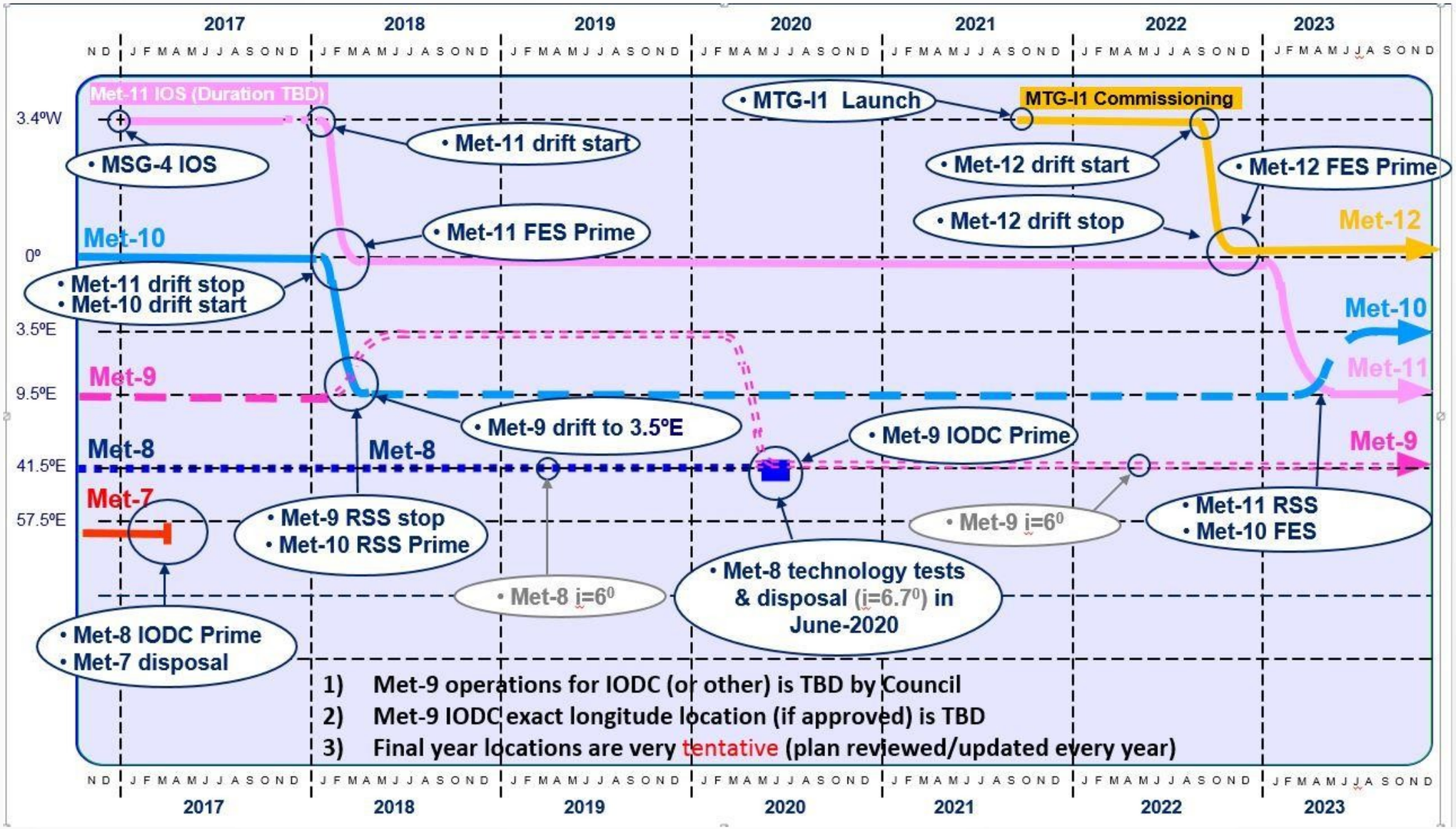
- In the past, we have used HDF5 version 1.6 to generate the GERB L2 products
- Synchronized with RAL
- The 1.6 branch of HDF5 is almost a decade old
- Recently RAL have switched to version 1.10 (latest branch), and we intend to do the same
- Will coordinate with RAL to ensure GERB L1.5 and L2 products are fully functional with (fairly) recent HDF5 readers

EUMETSAT ops affecting GERB

- Meteosat mission planning
- Operational Meteosat satellite
- EUMETSAT rectified grid
- Other operations

RMI

Meteosat mission planning



Operational Meteosat satellite

- MSG-4 (Meteosat-11) became the prime satellite in February 2018
- No imaging at 0° during the relocation
- We propose to suggest users to use 10 February 2018 as the date to switch from MSG-3 to MSG-4

EUMETSAT rectified grid

- EUMETSAT implemented a change in the geolocation of the rectified grid for all Meteosats, which went into effect on 6 December 2017
- Meteosat products produced before this date have not been reprocessed
- This affects all GERB L2 products; BARG affected very little, but an effect may be seen in the high-resolution product

Other operations

- EUMETSAT have implemented a new mask for Meteosat-8 (IODC) on 14 December 2017, due to the high inclination of the spacecraft
  - no effect observed on GERB products
- Decontamination of MSG-4 (Meteosat-11) planned for the period of 21–28 January 2019
  - 0° degree Full Earth Scan taken over by MSG-2 (Meteosat-9) at 3.5° E
  - No GERB product will be generated

NRT processing status

- GERB-1: off
- MSG-1 and GERB-2 NRT processing (located at 41.5° E, Indian Ocean): running nominally; see also presentation of Johan Moreels
- MSG-3 and GERB-3 NRT processing until February 2018
- MSG-4 and GERB-4 NRT processing

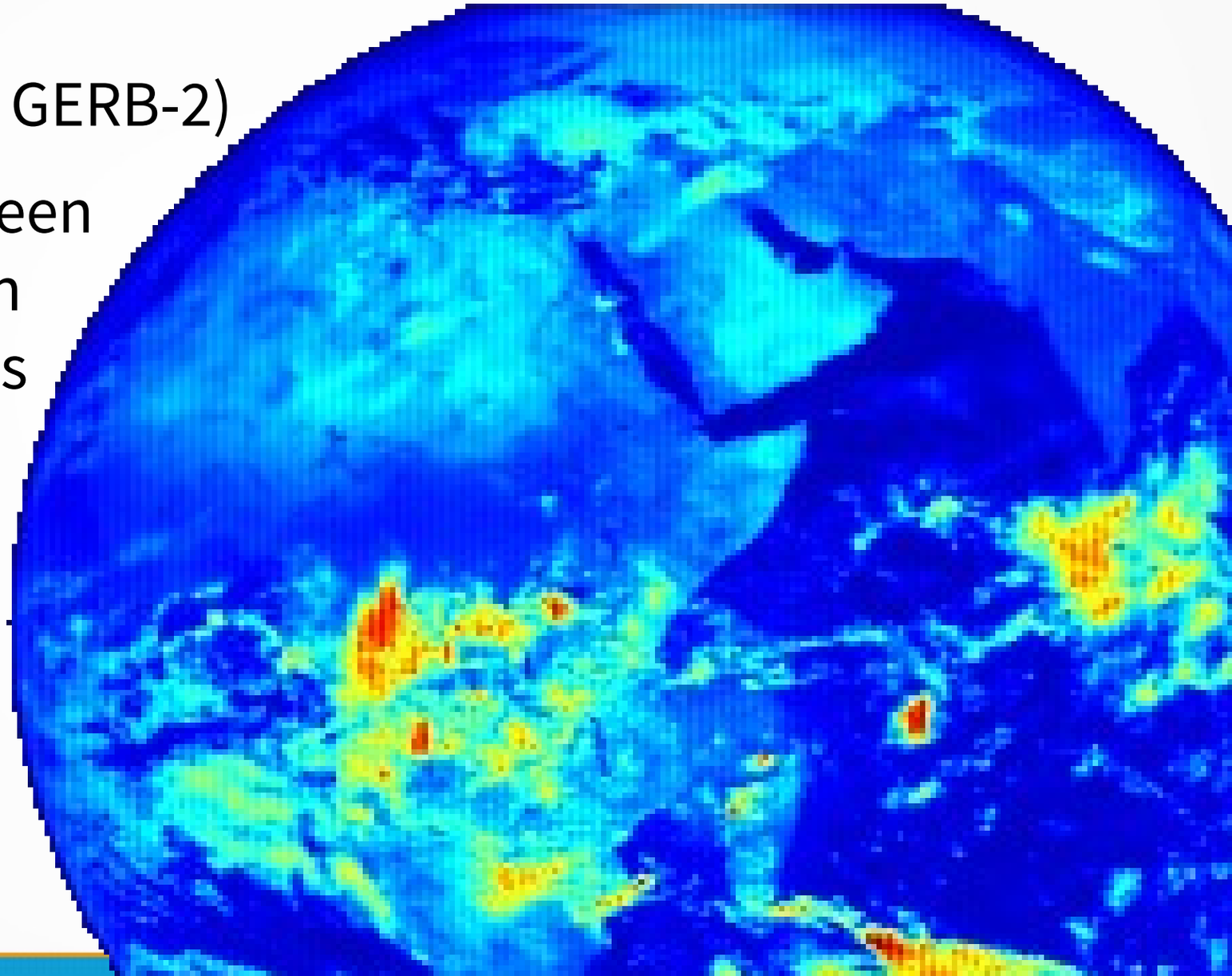
RMI

MSG-3 and GERB-3 NRT processing

- GERB-3 in safe mode for nearly 2 years, but one mirror face suffered noticeable aging due to the despin mirror being stuck in the same position
- Due to scanning strategy, results in marked difference between odd and even columns
- GERB data not released to the science community as Edition 1 (but data available as Cal/Val).
- GERB-like not affected

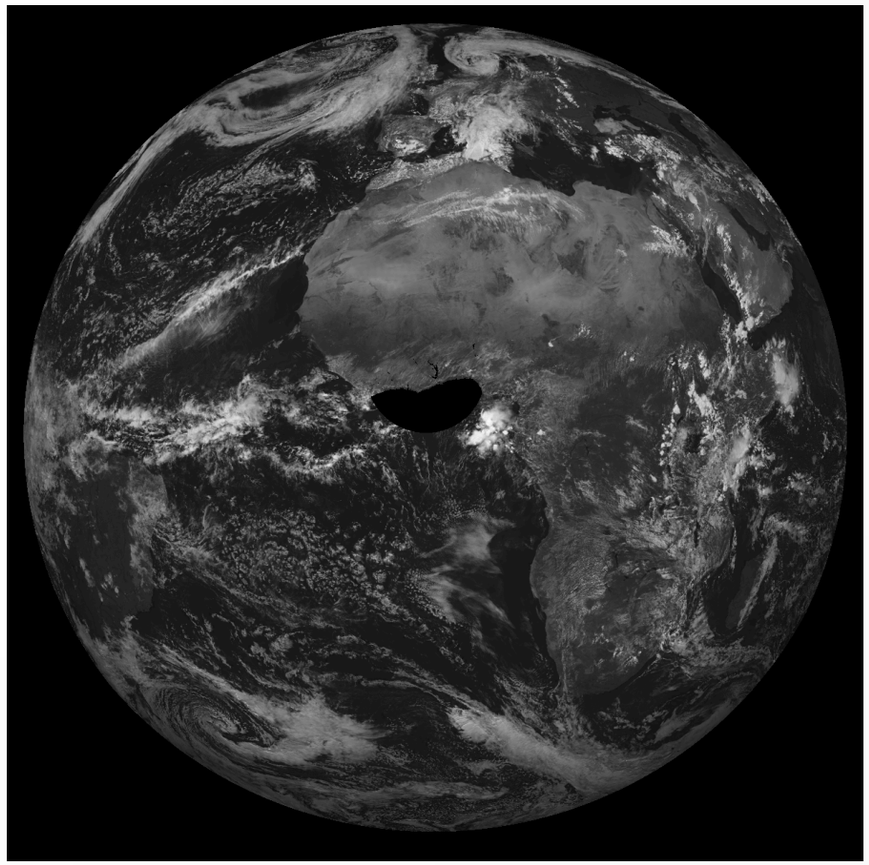
Despin mirror side asymmetry

- (Illustrated here for GERB-2)
- This problem has been addressed by Johan Moreels; see also his presentation



MSG-4 and GERB-4 NRT processing

- GERB-like OK
  - No significant processing problems
- GERB-4 SW level too high
- Will need to be reprocessed once updated characterization is available
- To be validated



Reprocessing MSG-3/GERB-3

- Data range
- Instrument stability
- Instrument level

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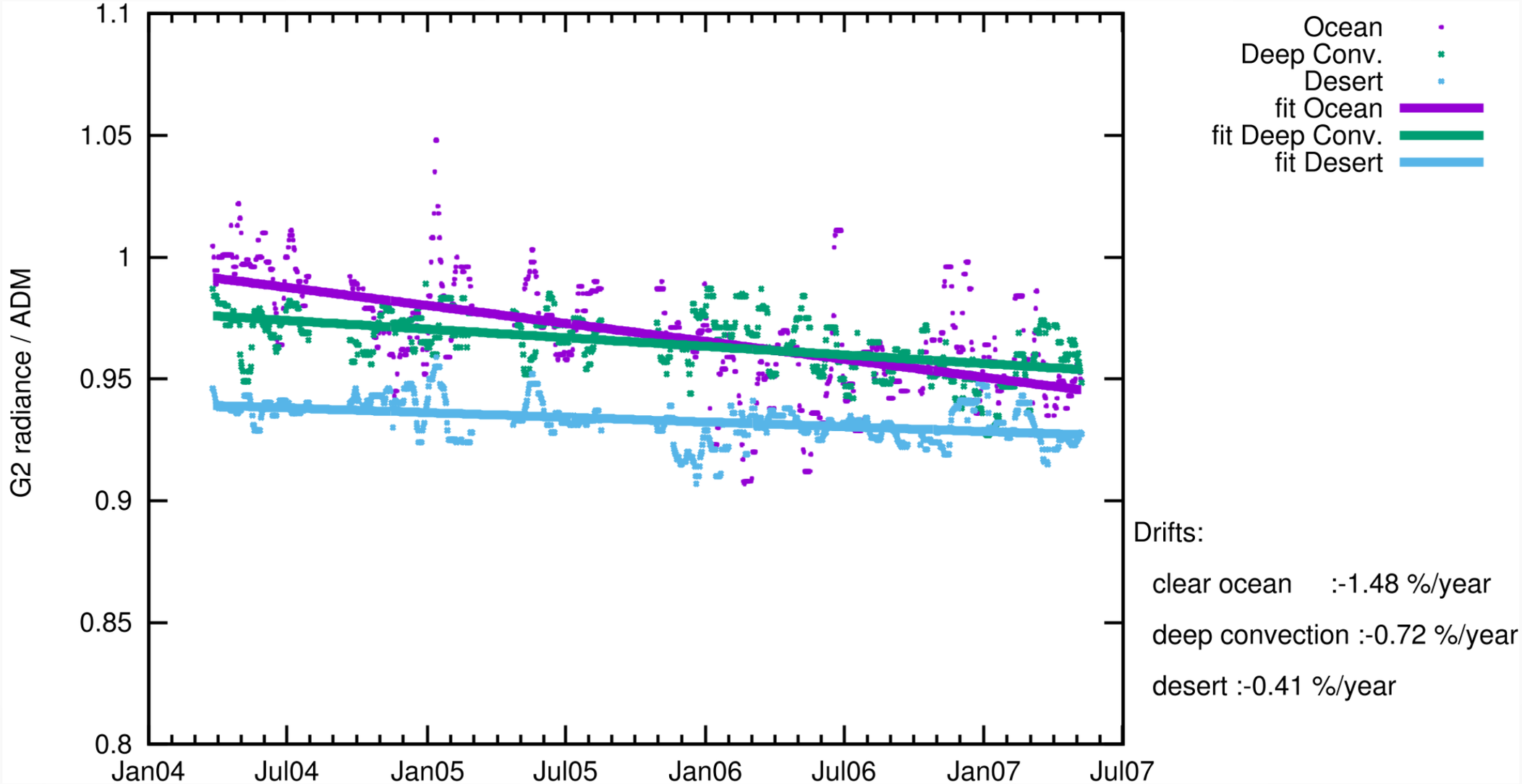
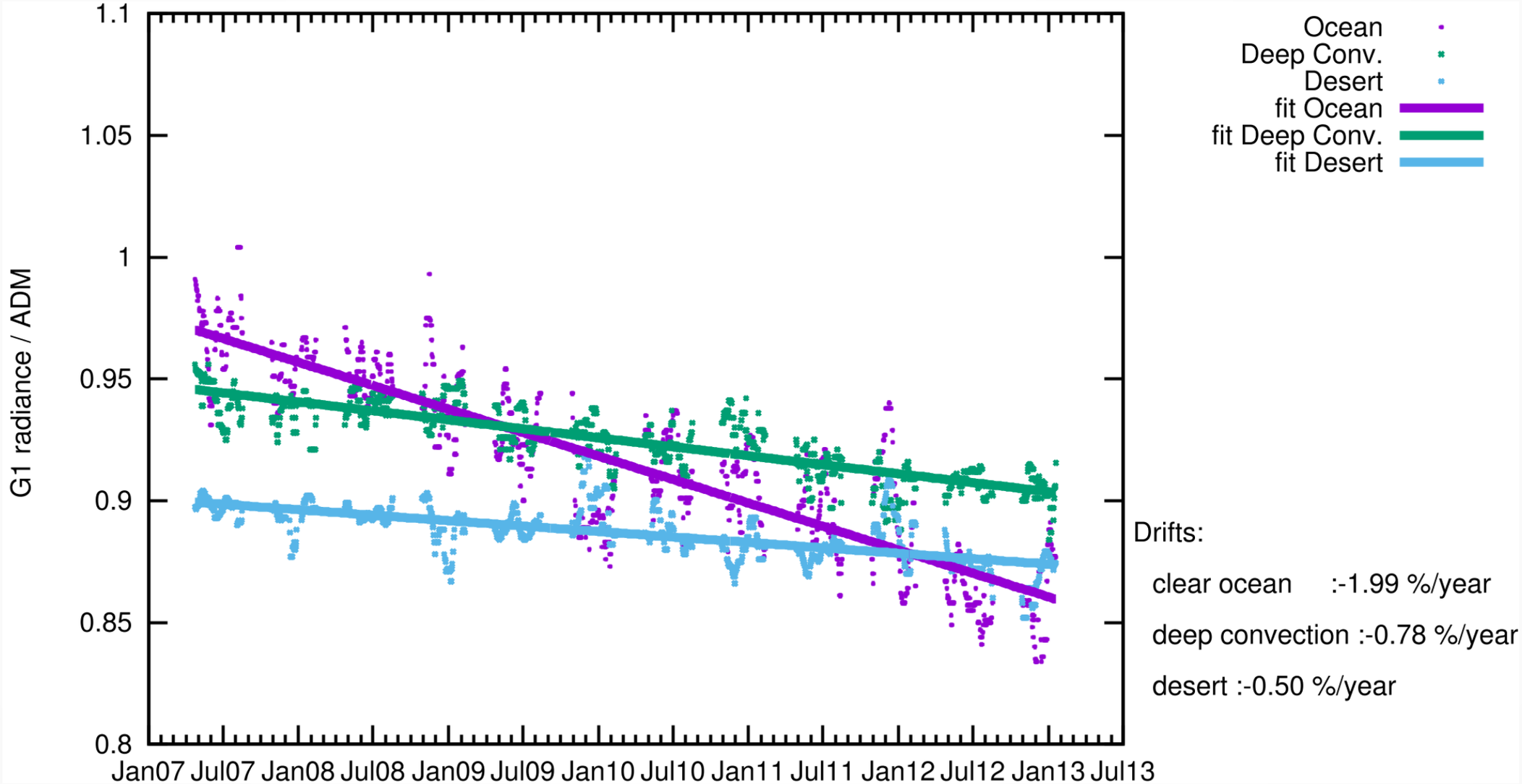
Reprocessing MSG-3/GERB-3

- Data available 28 April 2015 to 11 February 2018 (with reduced data in eclipse season)
- Includes a fix for the despin mirror asymmetry, developed by Johan Moreels
- Also reprocessed in the sun glint and twilight region
- Data available from the RMIB GERB team

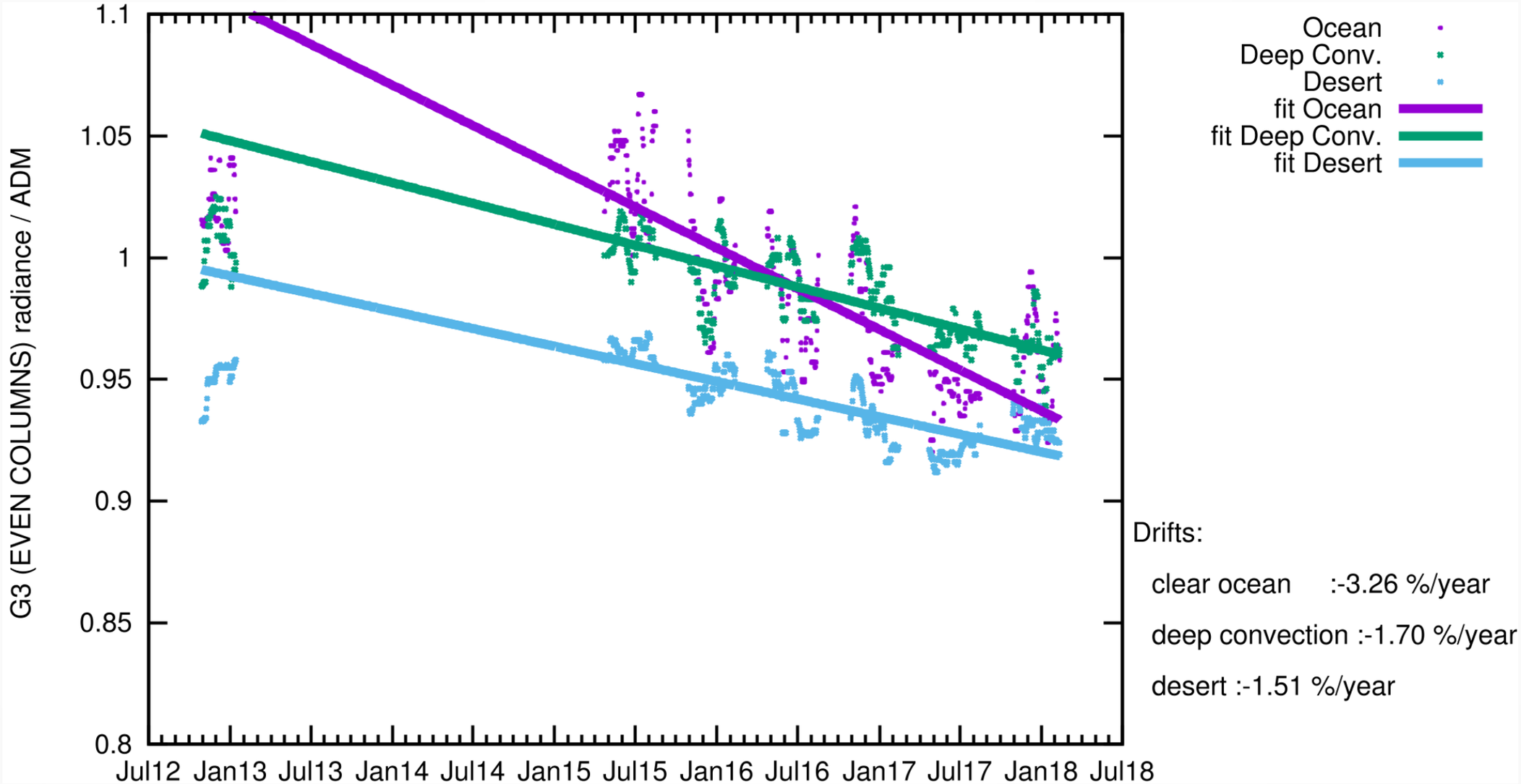
GERB-2 SW radiance stability



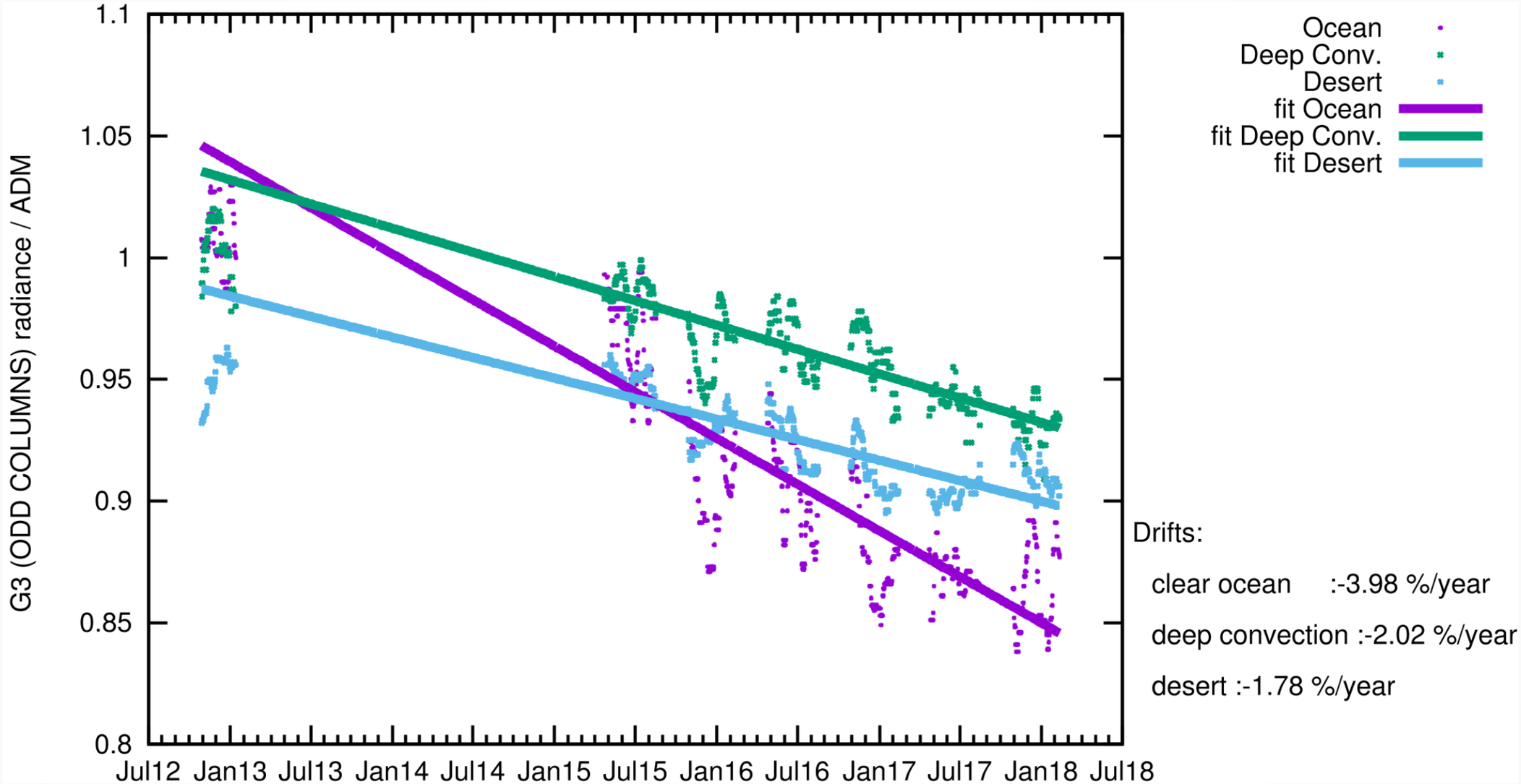
GERB-1 SW radiance stability



GERB-3 SW radiance stability (even c.)



GERB-3 SW radiance stability (odd c.)



Instrument stability

	G2	G1	G3 (even)	G3 (odd)
ocean	-1.48%/year	-1.99%/year	-3.26%/year	-3.98%/year
deep convective	-0.72	-0.78	-1.70	-2.02
desert	-0.41	-0.50	-1.51	-1.78

- GERB-3 degradation seems to be faster than that of GERB-2 and GERB-1

Instrument levels

	G2 2004-02-01	G1 2007-05-01	G3 (even) 2015-05-01	G3 (odd) 2015-05-01
ocean	0.9937	0.9698	1.0265	0.9512
deep convective	0.9769	0.9455	1.0080	0.9856
desert	0.9397	0.8993	0.9588	0.9449

- GERB-3 (even columns) approx. 2–3% higher than GERB-2, and approx. 5–6% higher than GERB-1

Edition 2

- What has been implemented
- What remains to be done

Edition 2: implemented

- New visible SEVIRI calibrations from Meirink et al. (2013)
- New SEVIRI BT & BTD regressions for radiance-to-flux
- ERA-interim wind speed (reanalysis) instead of monthly climatology
- Improved clear-sky reflectance computation
- New cloud LUTs and cloud phase detection
- New ADMs for thermal radiation

Edition 2: to be done

- Use new GERB calibrations developed by Imperial College (Parfitt et al., 2016)
- Dynamic surface type: to be re-assessed
- Tune COD threshold for cloud detection
- Aerosol ADM activation: to be validated
- Validation

End