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Ocean colour data access and tools

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Documents consulted

- "A compilation of requirements for software and tools for the use of Sentinel-3/OLCI data at L1B and L2" S-3 MAG-M1-A2 action
  - Ocean colour community consultation in June-July 2011 via multiple fora and email lists (inc. ESA/ODESA and NASA/Oceancolor fora)
  - 18 contributions received from ocean colour scientists:
    - Europe (7), USA (6), Africa (1), Asia (1), Unknown (3)
    - Not software developers, except NASA/Ocean Biology Processing Group
  - Only Ocean Colour/OLCI … relevant for other Sentinel-3 instruments?

  - Summary report (Nov 2011, 1.5 pages of recommendations) available from:

ftp://ftp.mumm.ac.be/kevin/S3OLCI_SoftwareTools_SummaryReport_v1.2_MAIN.pdf

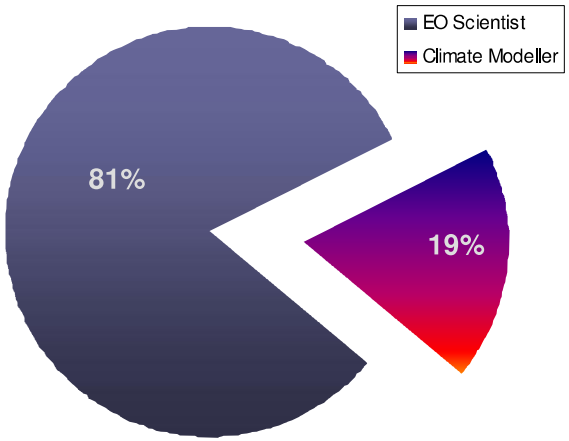
  - Full anonymous comments of all contributors have been supplied as confidential annex to ESA and the main ocean colour software developers (BEAM, GDPS, GIOVANNI, ODESA, SeaDAS)

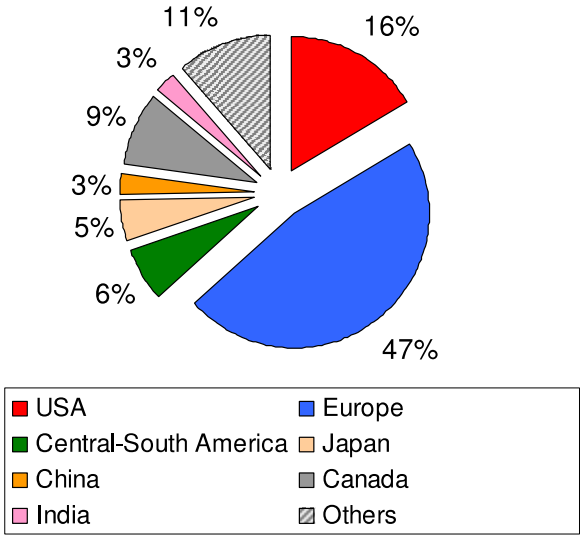
  - Report has been discussed at the IOCCG (International Ocean Color Coordinating Group) meeting of all relevant space agencies – very positive response

Documents consulted

- Ocean Colour Climate Change Initiative User Requirements Document v1.11 (June 2011)
  - Ocean colour community (EO scientists and modellers) 2010-11 via web based multiple choice questionnaire
  - 56 named contributions + anonymous
  - Document available from OC CCI project

- Results herein on
  - Requirements for data manipulation and other tools;
  - Requirements for data formats and access



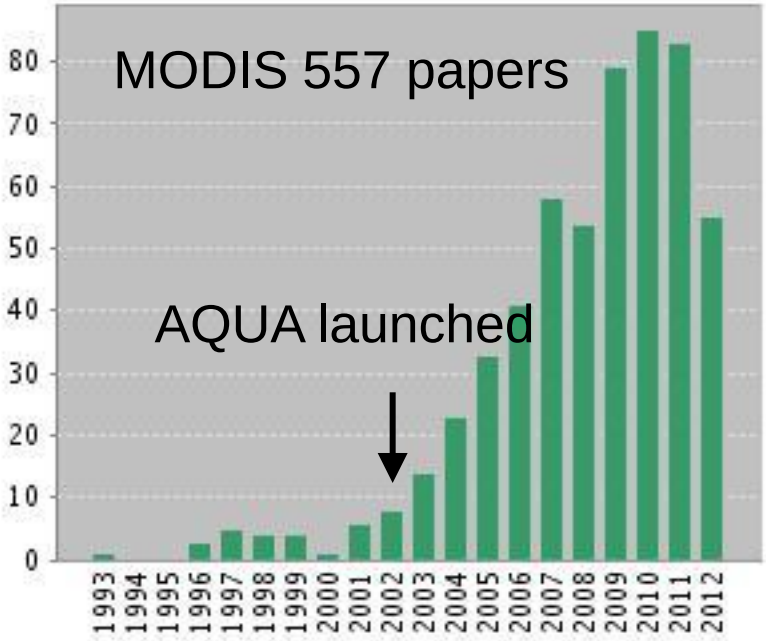


S3/OLCI – requirements

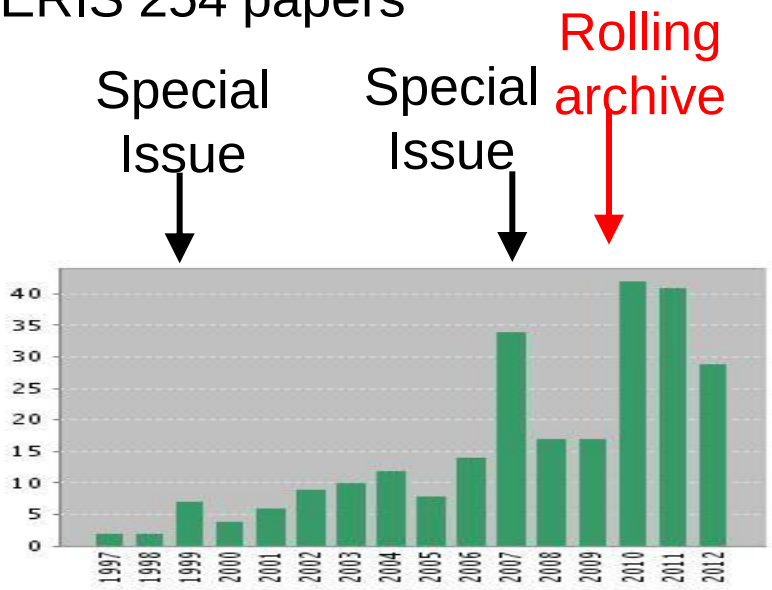
- Open source modular software (portable)
  - “source code is the best documentation”
- L1 to L2 highest priority
  - Also some interest in L0-L1 and L2-L3
- L1 uncalibrated + regular cal tables distribution [i.e. L1A]
  - Facilitates local archives, reduces need for major reprocessing
- Multi-OC sensors
- Multi-Sentinel3 sensors
- Multi-sensor format harmonisation
  - At least data readers/writers to facilitate exchange (NetCDF, HDF, OGC)
  - Possibility to add new products
- Data analysis tools:
  - Pixel time series, matchup extraction
  - Import other vector/raster info
- Batch processing inc cloud/web-based processing
- Continuity of tools from existing software
- User support including incorporation of user algorithms

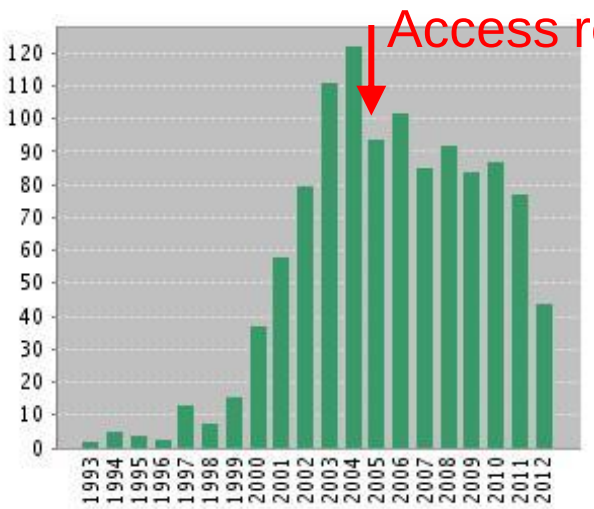
Data access: impact of open access

Web of Science search on "*sensor* and chlorophyll"



MERIS 254 papers





SeaWiFS
1124 papers

If scientists have easy access to the data … they will use it!

…and need constant access, not just a rolling archive

OC CCI – requirements

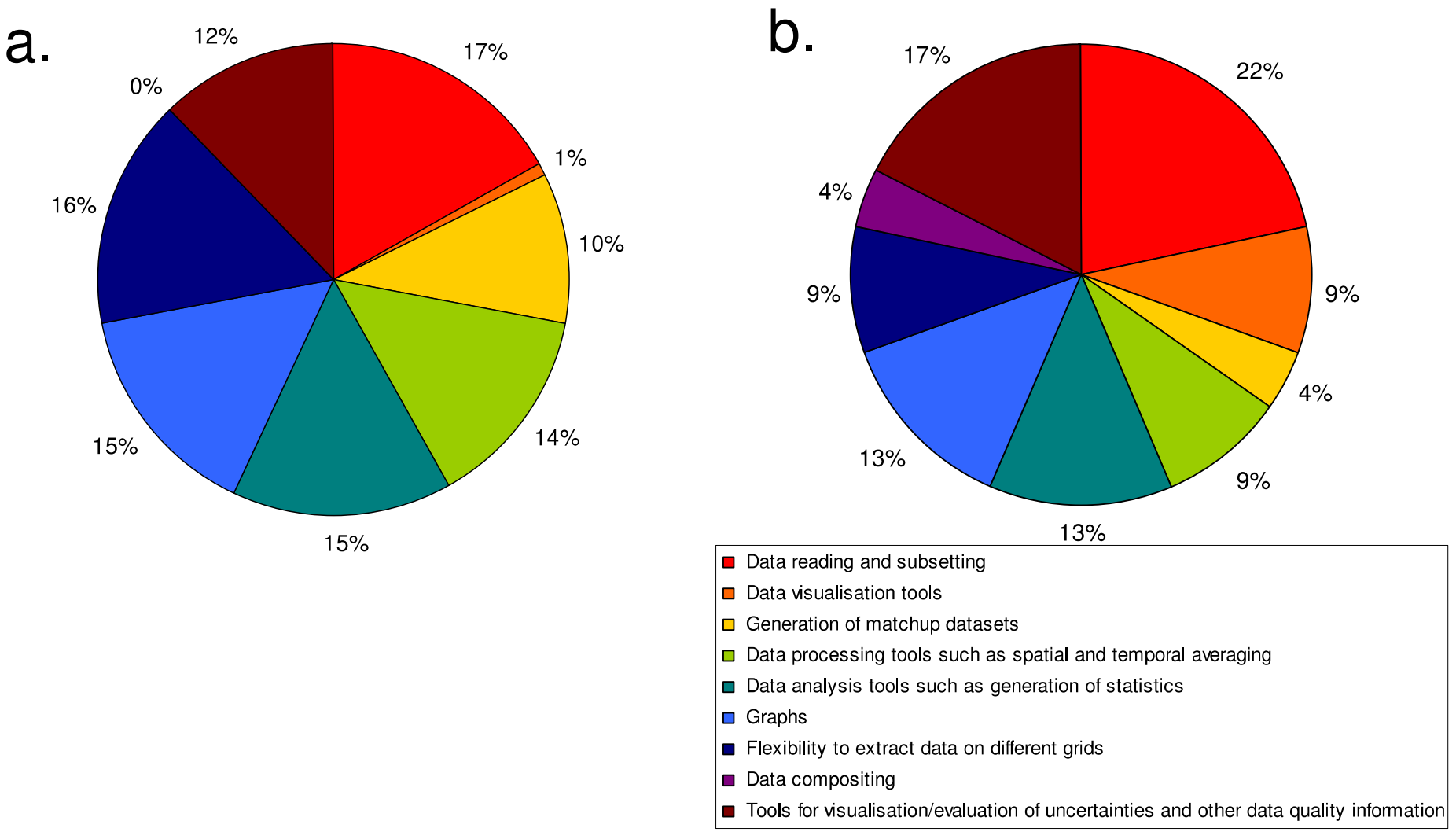


Figure 3-7: Applications that would be used for Ocean colour products (if available) by: a) EO scientists and b) Climate modelers.

OC CCI…Data product levels and delivery

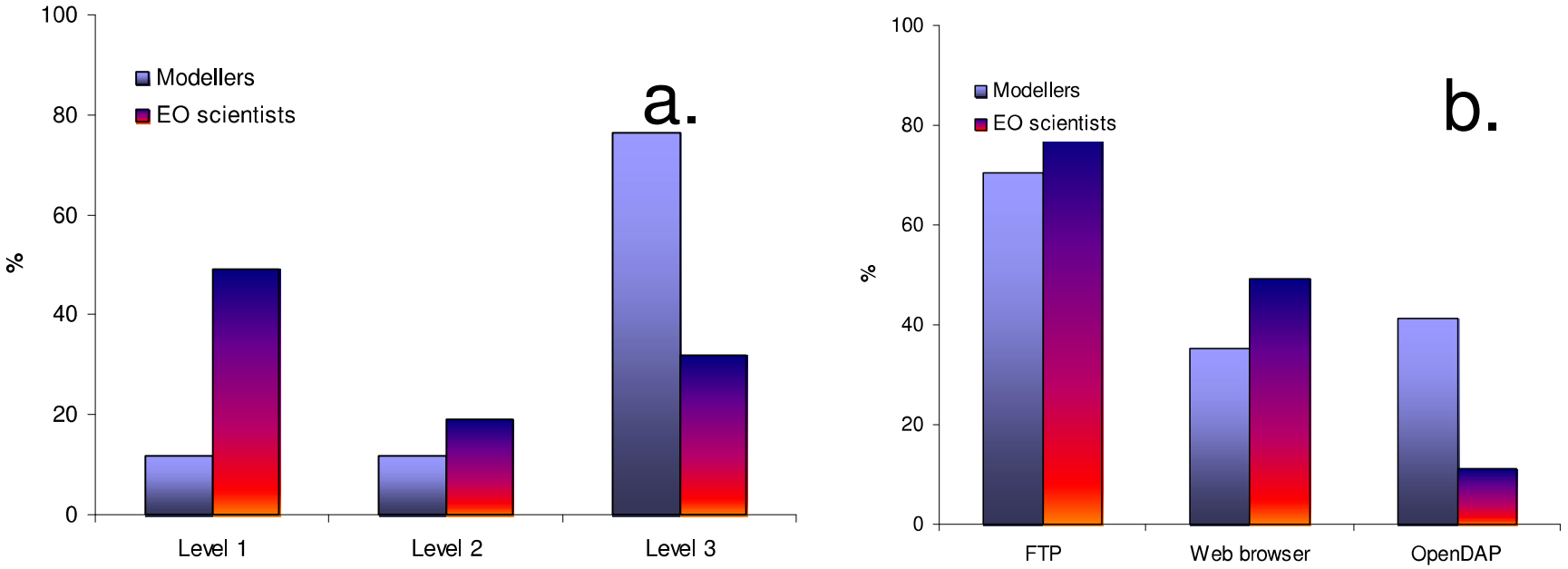
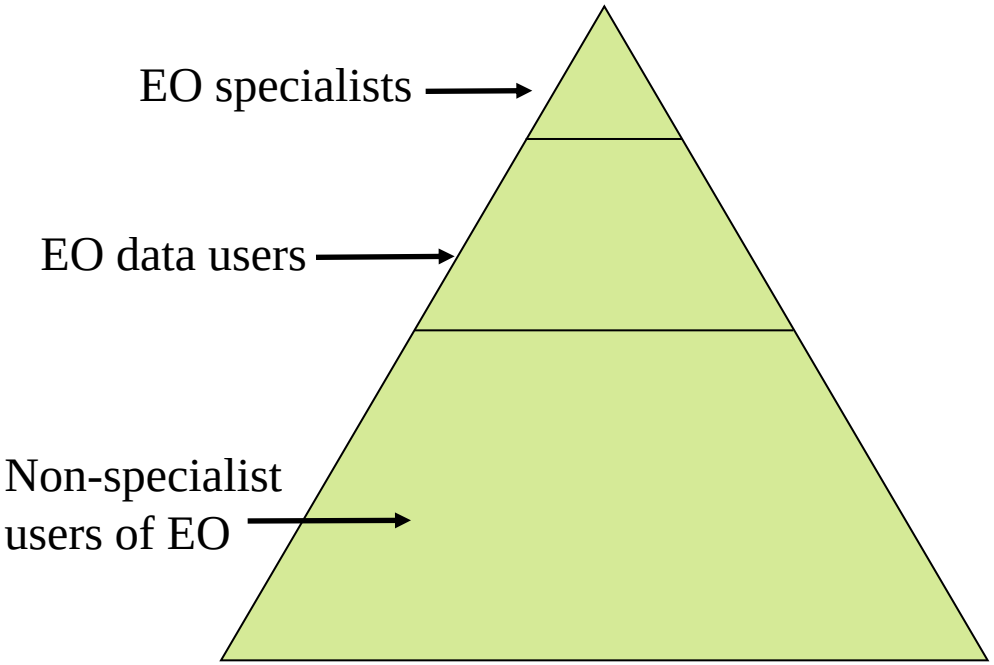


Figure 3-9: Preference of users concerning : a) Level of processing of data and b) Data access. Note that this was a multiple choice question, hence the total number of answers to it is greater than the number of responses

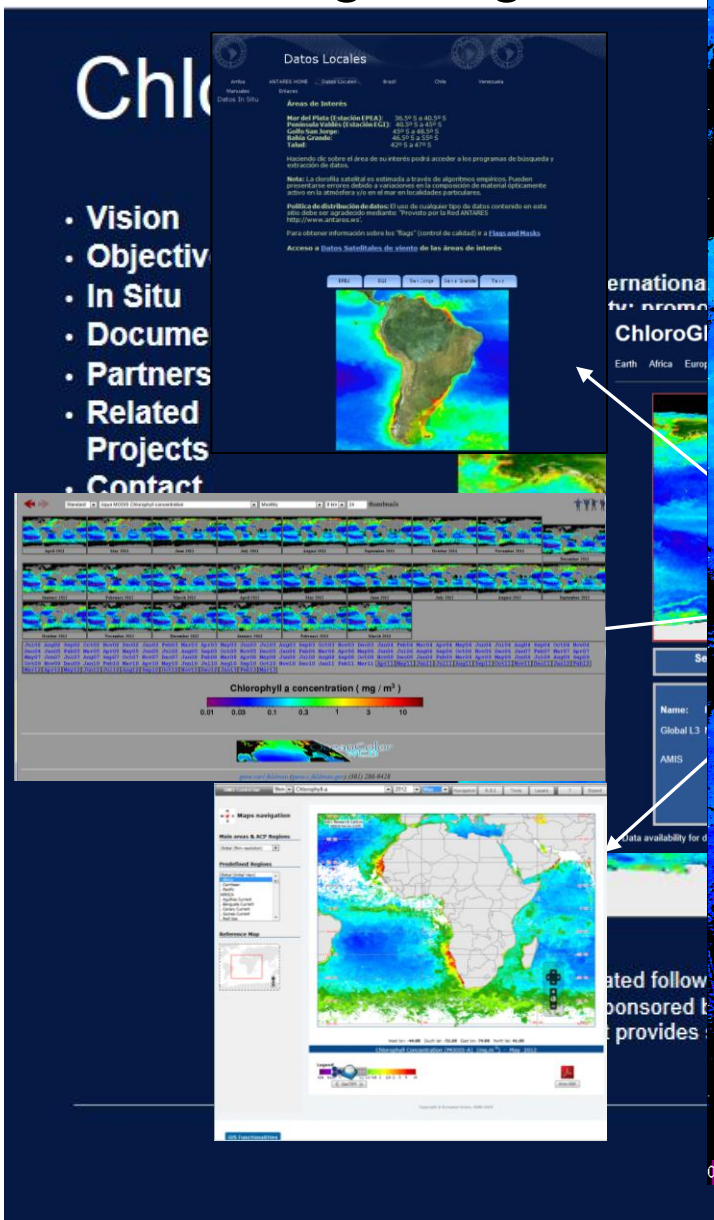
User community

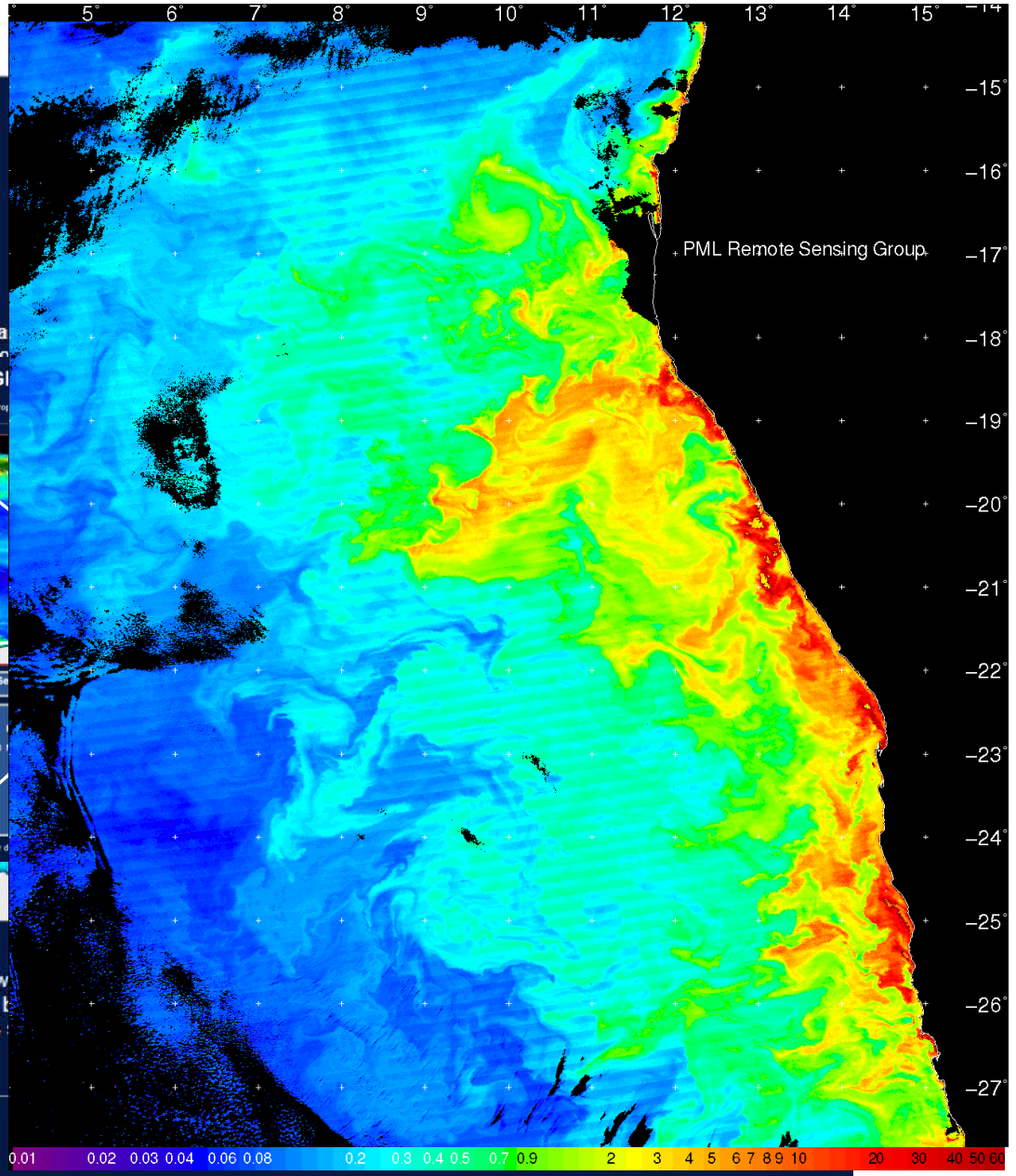
- Are we meeting requirements of the whole potential community?



Regional access to data: e.g. ChloroGIN Portal

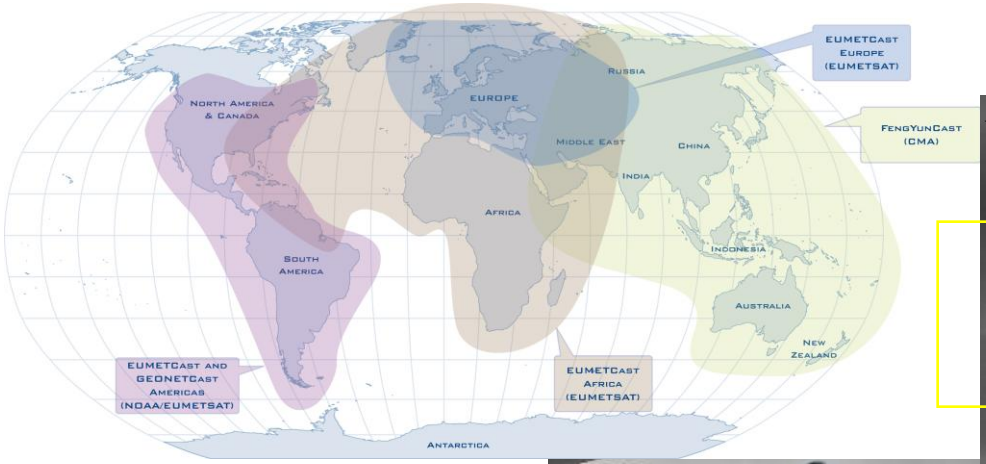
- www.chlorogin.org

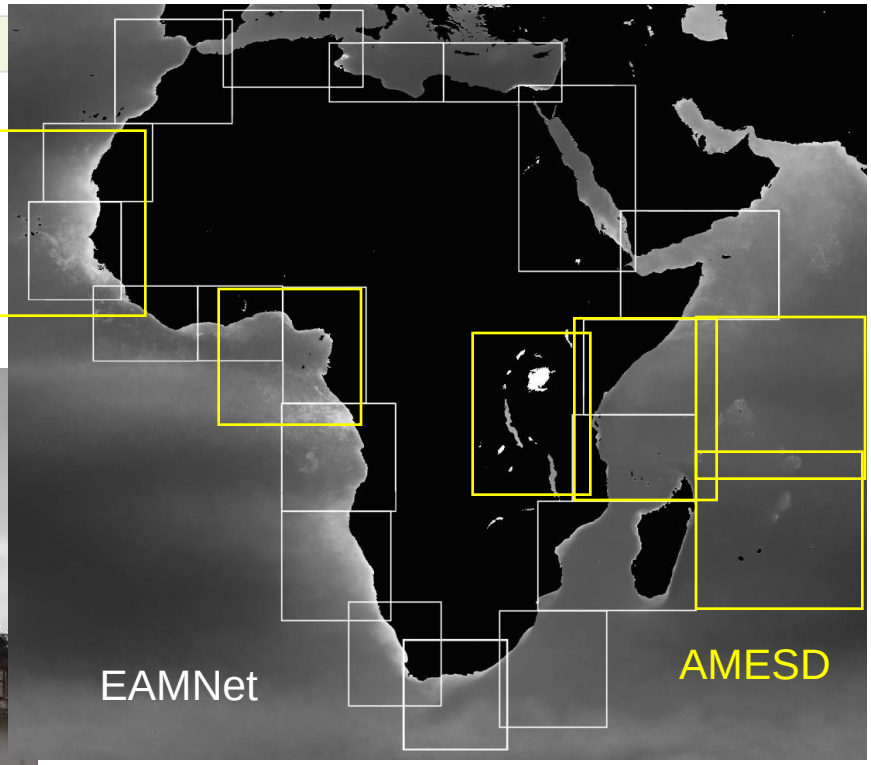




Data delivery

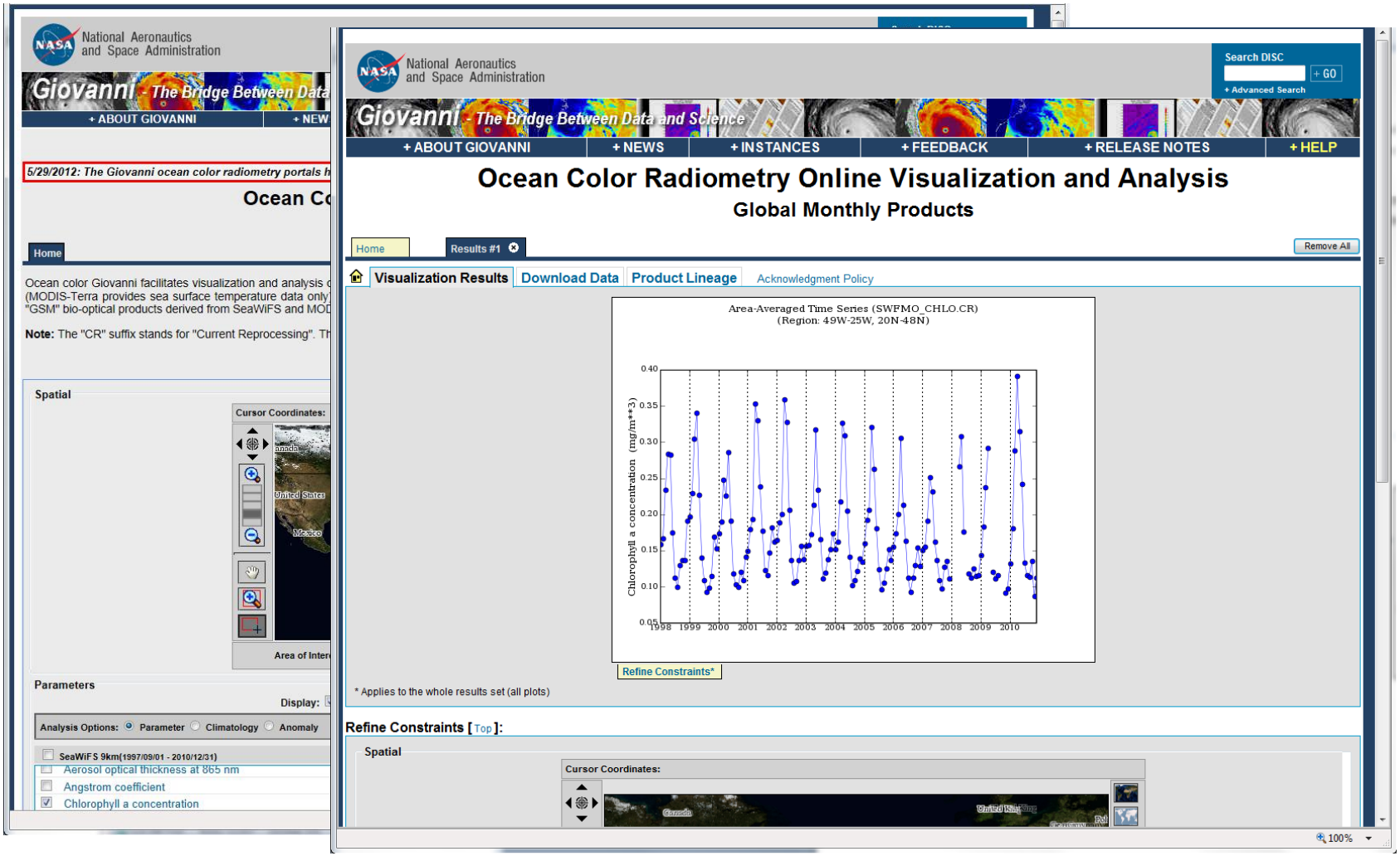
- EUMETCast – delivery by digital video broadcast
  - Different speed over different systems
  - Useful for delivery of data where internet poor e.g. in Africa – but is bandwidth enough? OK for processed products





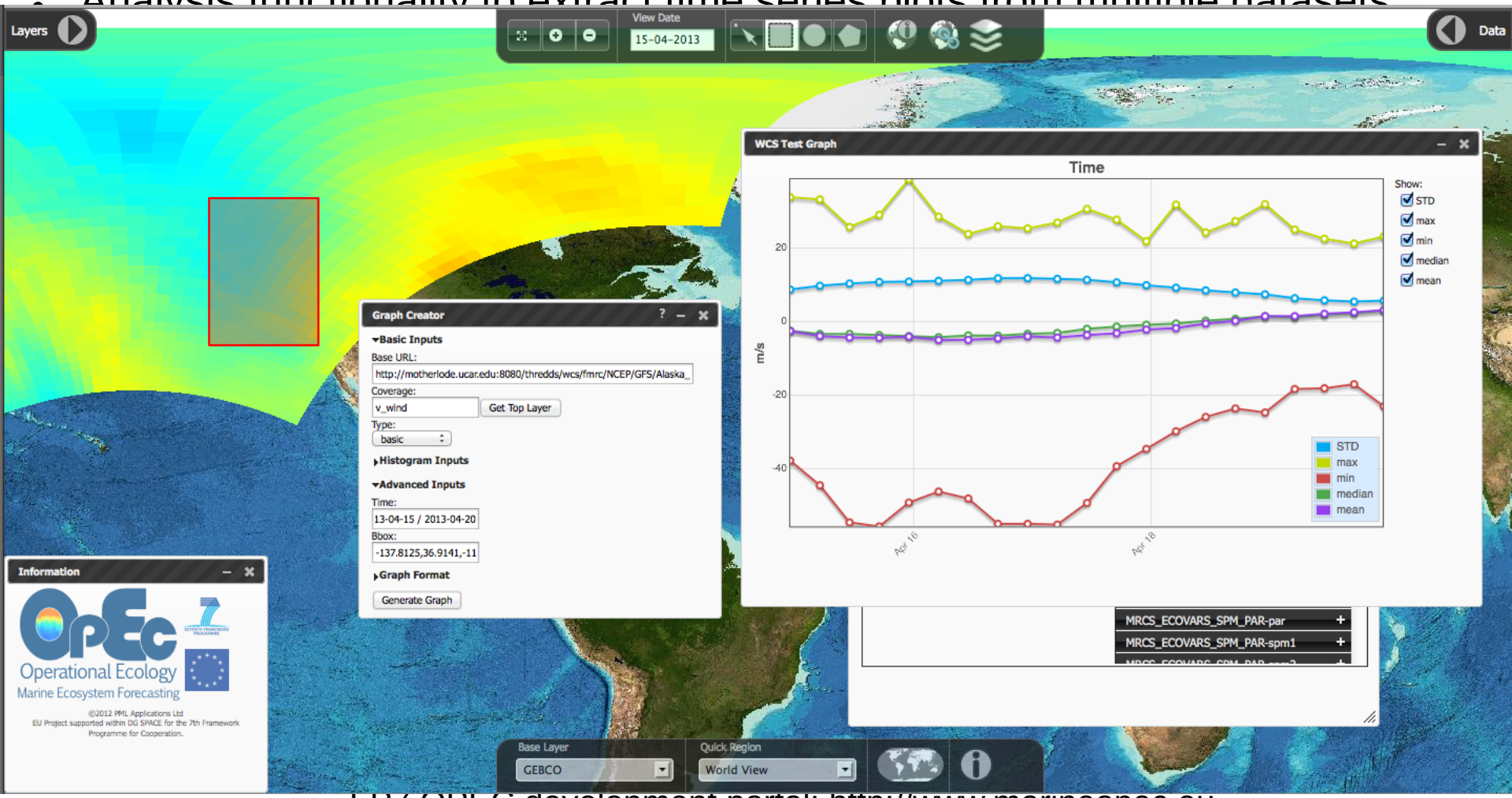
Ocean colour on-line analysis tools

- The non-specialist user wants easy access, on-line data analysis tools such as the NASA GIOVANNI



Ocean colour analysis tools

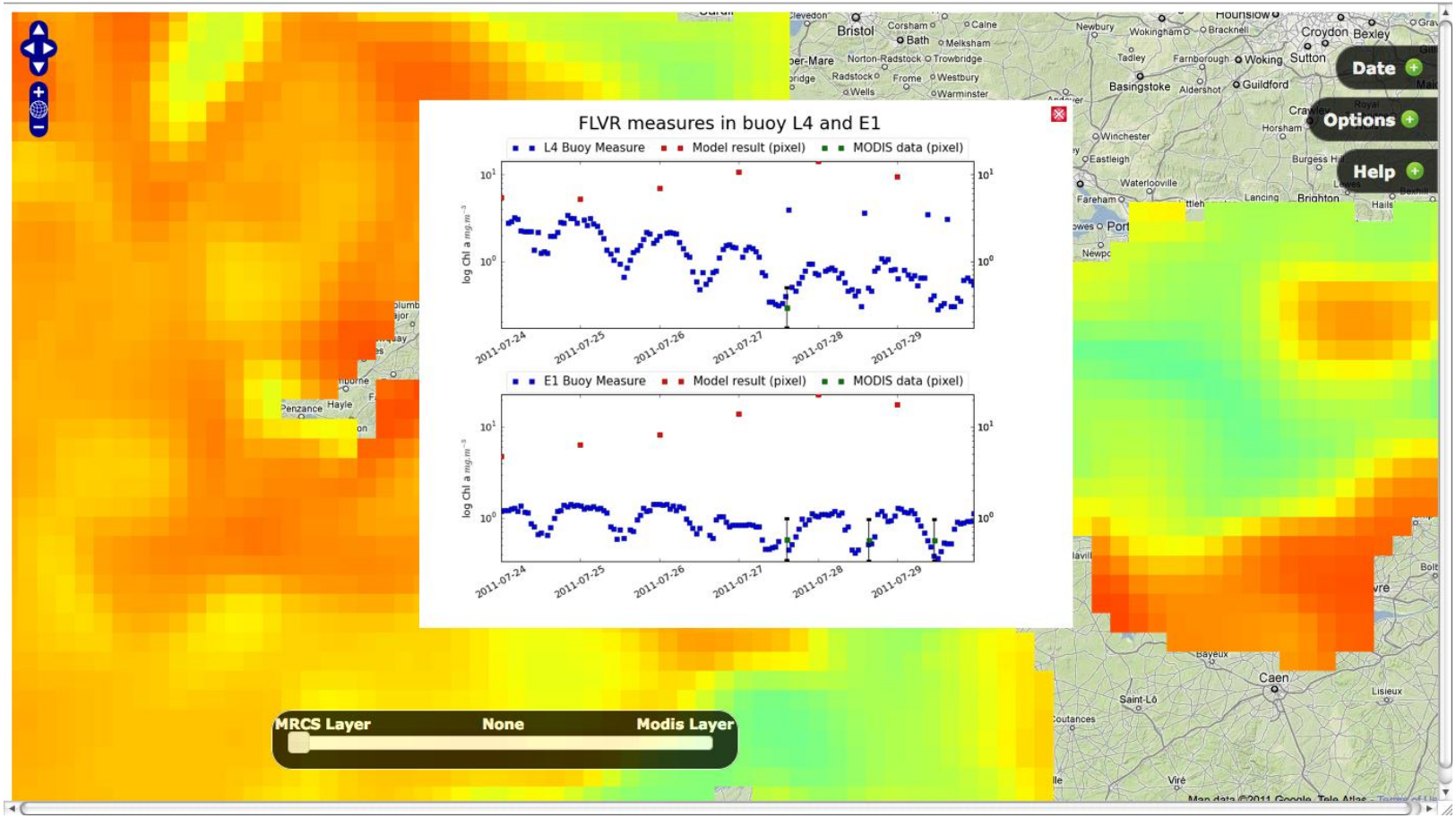
- Open Geospatial Consortium Web Map, Coverage and Feature services
- E.g. portal being developed in EC FP7 OpEc project
- Analysis functionality to extract time series plots from multiple datasets



FP7 OPEC development portal: http://www.marineopec.eu

Web Processing Services

- OGC WPS (Web processing services) specifies how processes can be constructed from existing components and used on-line, including between different sites



Summary

- Users want
  - Open access to data at all levels from L1A up to L3/L4…
  - Open source software for data processing esp. L1-L2
  - common to all OC data sources
  - ftp, OPeNDAP, web…

- Have we considered requirements of all levels of users?