

Review of Marine ECV discussion session

SEA LEVEL

Developments in the Arctic

SEA SURFACE TEMPERATURE

Use of SST CCI in Primavera, EUSTACE, NCEO (SST/SL)

OCEAN COLOUR

Challenge of MODIS – taking on VIIRS

CROSS ECV ISSUES

Developments in uncertainty across all projects

Problem of sea ice

Extending budget studies using CCI data

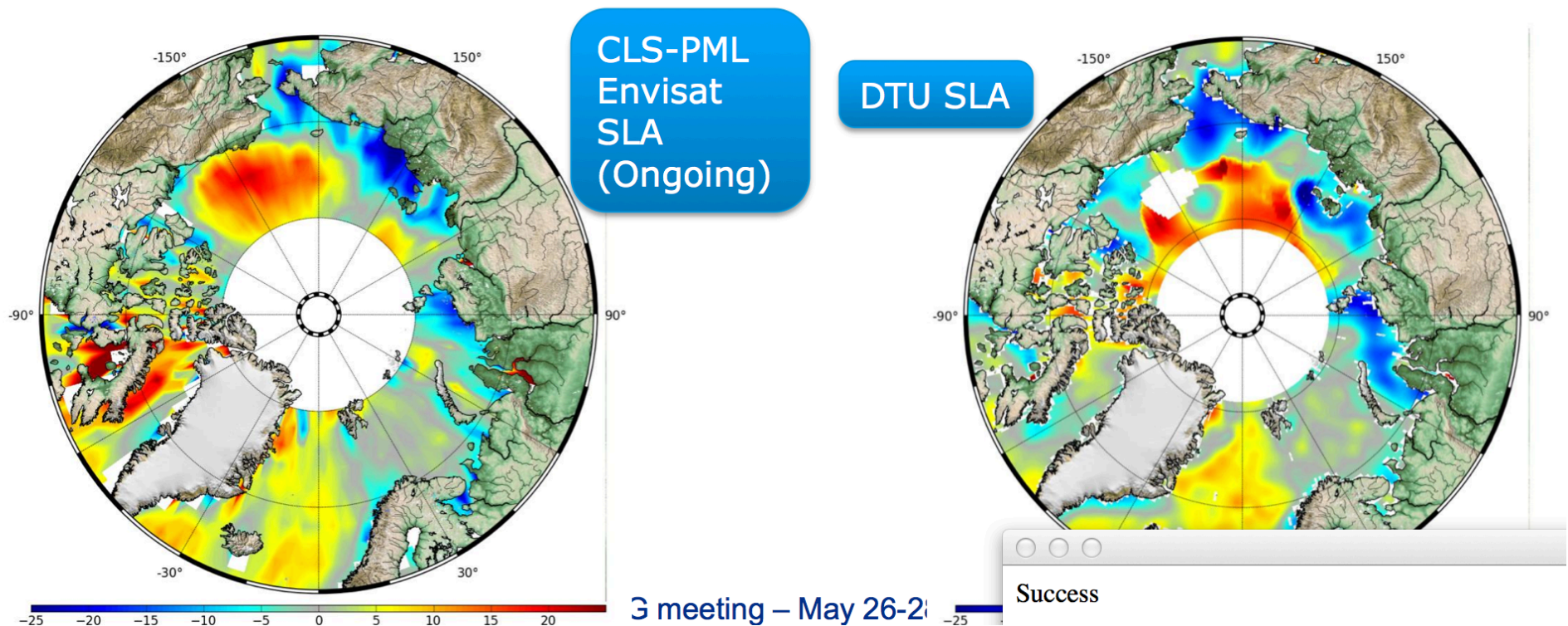


PER PROJECT HIGHLIGHTS

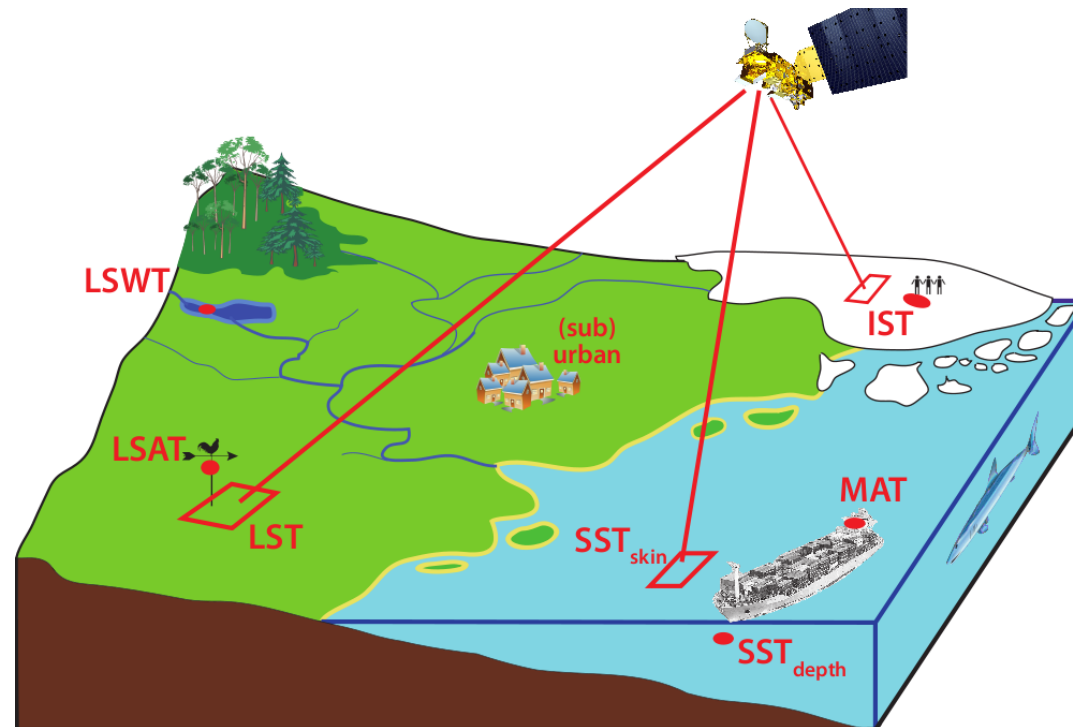
New product for Arctic



- On going work
- New monthly Arctic products based on Envisat data only : preliminary results are very encouraging
 - Very good coverage over leads and SLA quality seems good
 - Continuity between open and ice covered ocean (thanks to new retracking)

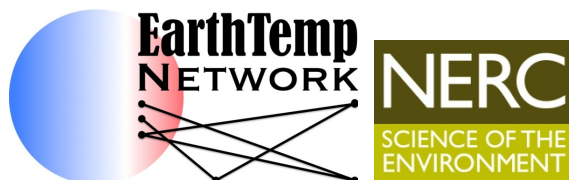


EUSTACE: understand, parameterise and exploit relationships between satellite (skin) and meteorological air temperature, for global historical analysis



From Merchant et al., 2013 community paper and roadmap:

<http://www.geosci-instrum-method-data-syst.net/2/305/2013/qi-2-305-2013.html>



OC CCI Data – details MODIS anomaly

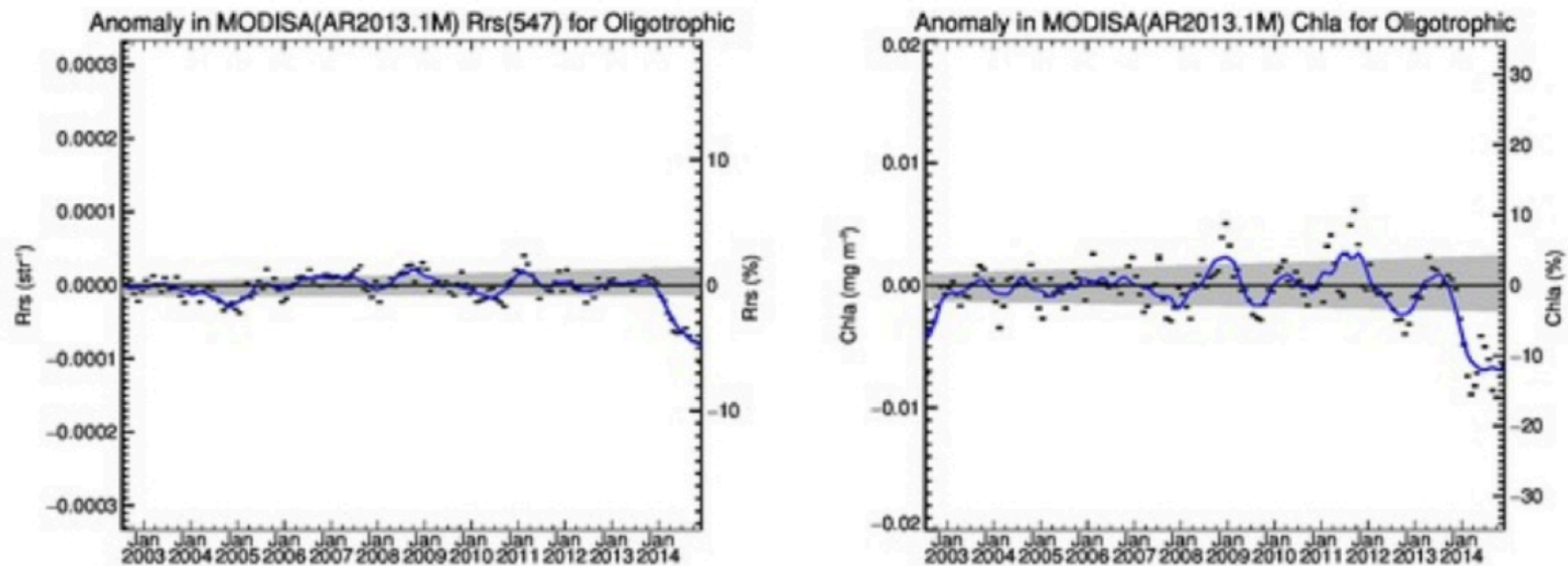


Figure 3: Rrs547 and chlorophyll anomalies from a NASA presentation at IOCCG (Mar '15).
Accompanying text: "In 2014, all radiometry shifted (up in blue, down in green), with

DEVELOPMENTS IN UNCERTAINTY

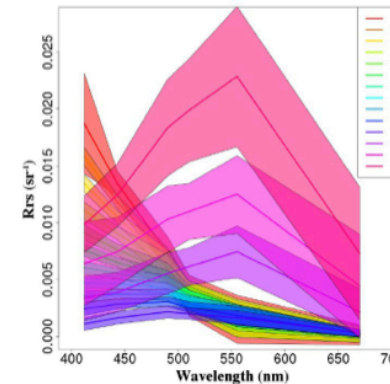
OC CCI Data - details



v2.0 extended the time series of SeaWiFS, MODIS, and MERIS to the end of 2013, (2014 omitted because declining performance of MODIS)

4.6 km binned data , 16 years,
all products, daily + all subsets 5day, 8day, monthly
+ error (bias and rmsd)
for geographic and sinusoidal projection

improved the in-situ database v2.0 used for
characterisation and quantification of error,
developed specific water classes based on the v2.0 data
(rather than on Tim Moore's SeaWiFS-based classes in v1)

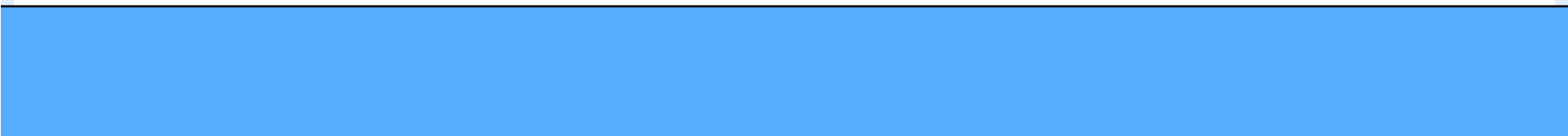
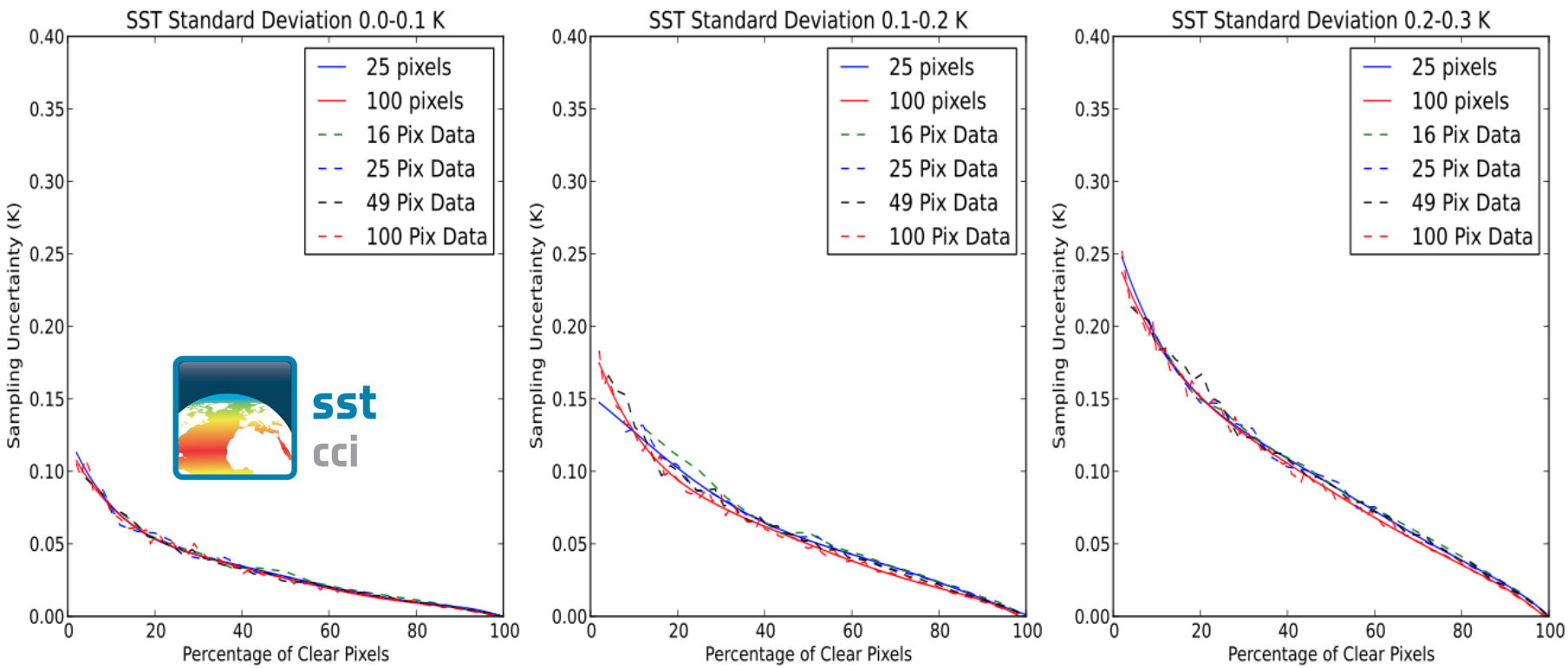


Spectral response of the water types used in OC-CCI v2.0 products (hard lines are class means and shaded region shows standard deviation).

switched the NASA sensors to being consistently mapped by BEAM as with MERIS (correcting some pixelisation issues noted in v1.0),
incorporated an improved bias correction able to respond to temporal variation (primarily seasonal) and
use an improved cloud mask (Idepix 2.0) for MERIS.

L3

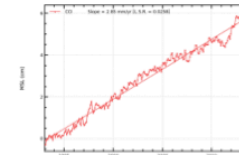
Additionally, there is a sampling error introduced where the L3 cell is not fully observed (e.g., partly cloudy). This is a random effect, and adds to the uncertainty estimated from propagated noise – (new Phase 2 development)



Confidence Envelop : cumulated errors for error trend signal



Generate a set of
GMSL time-series
with equivalent
qualities



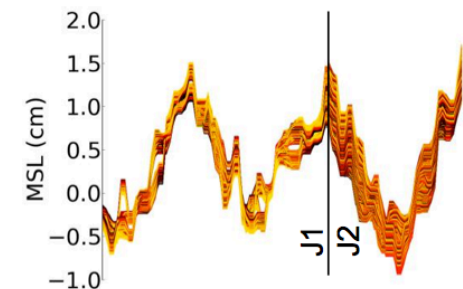
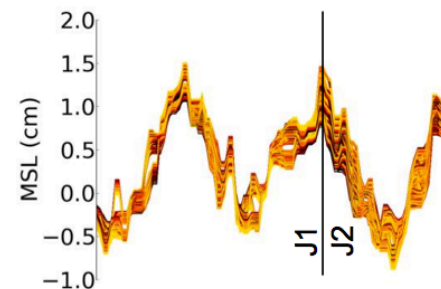
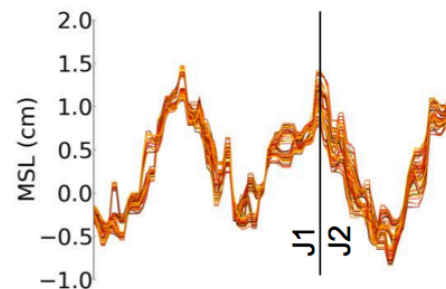
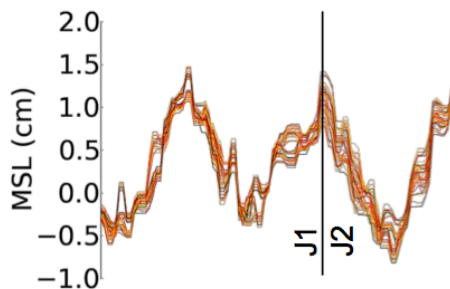
4 uncertainty families are tuned

Standards

Data Selection

Average Mesh
Grids

Missions Linking



More than 18000 time-series are produced in the
set, allowing a significant statistical approach

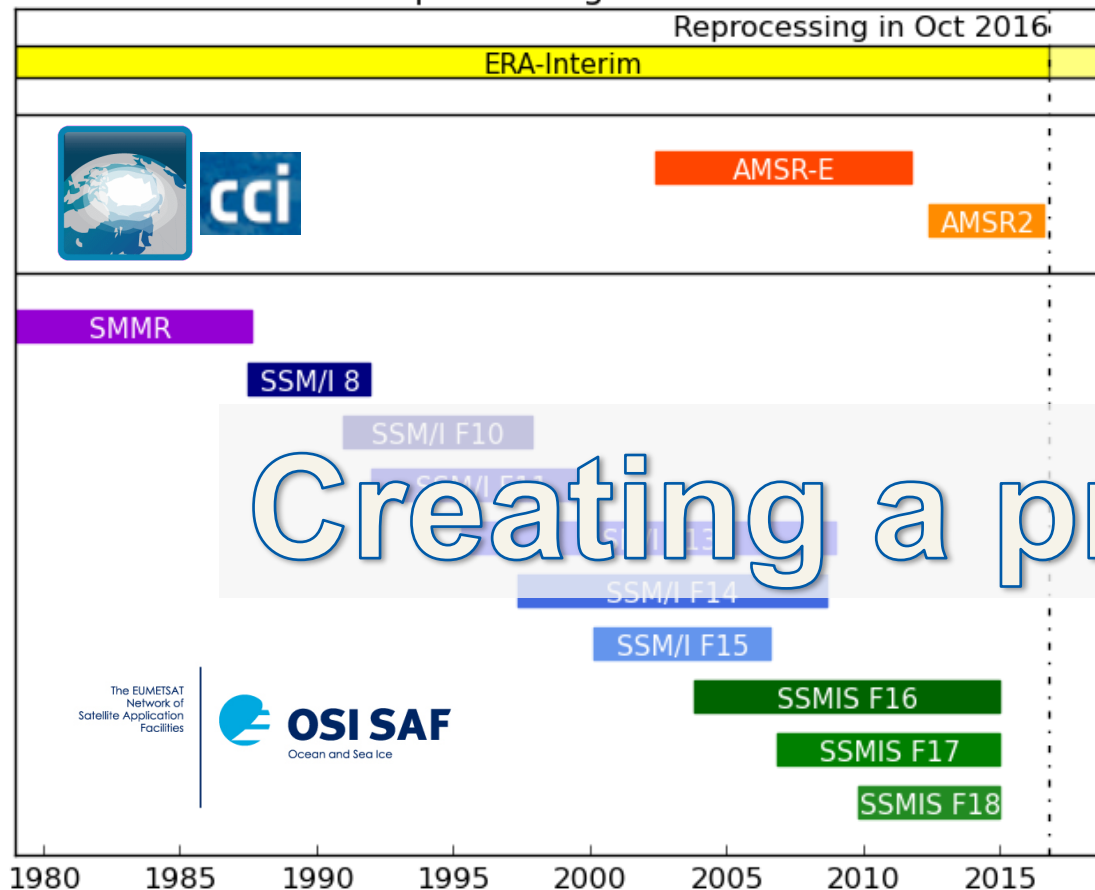
CMUG meeting – May 26-28th 2015



CROSS ECV ISSUES

Ice concentration provided by ESA CCI and EUMETSAT OSISAF

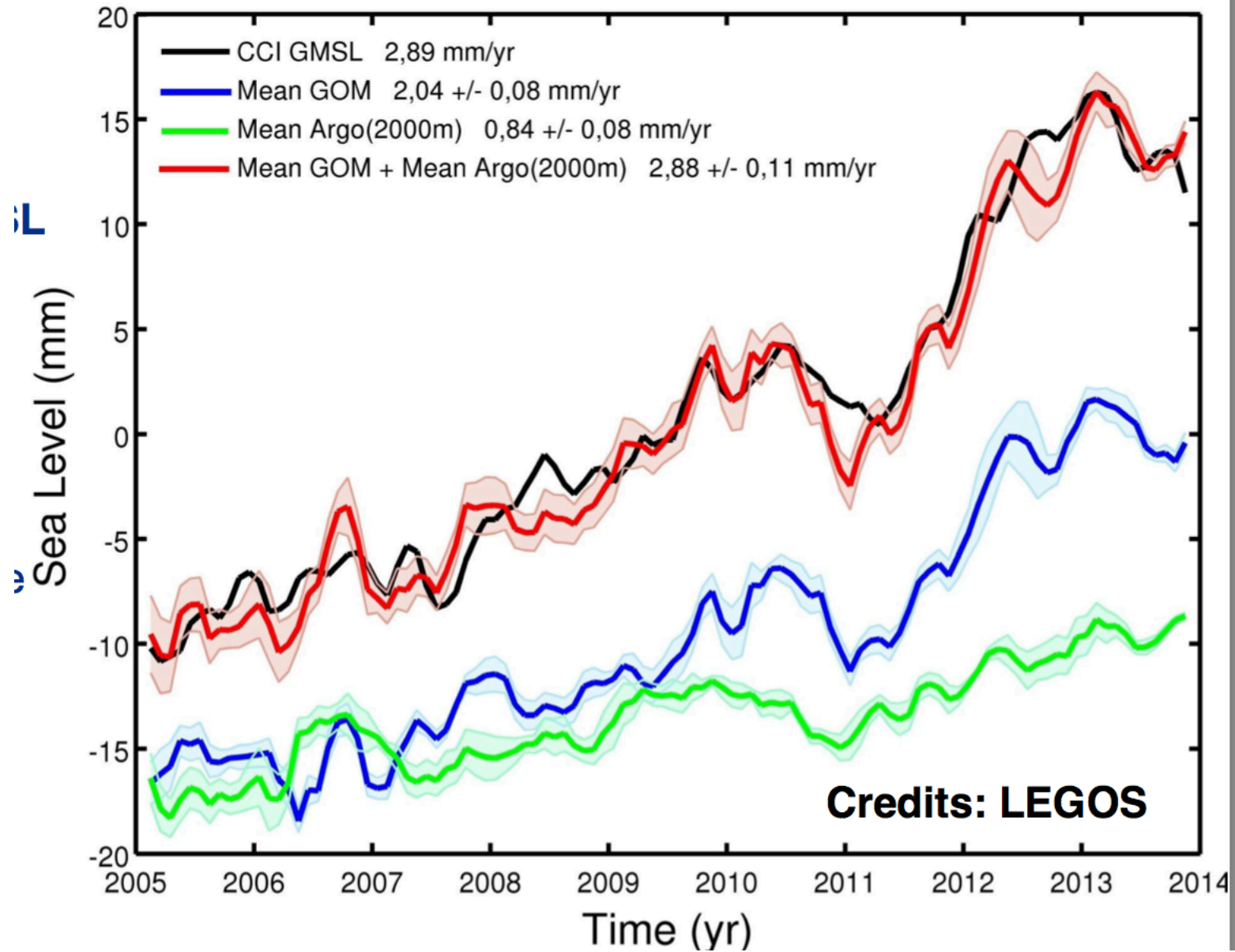
Satellite sensors for Sea Ice Concentration reprocessing in 2016



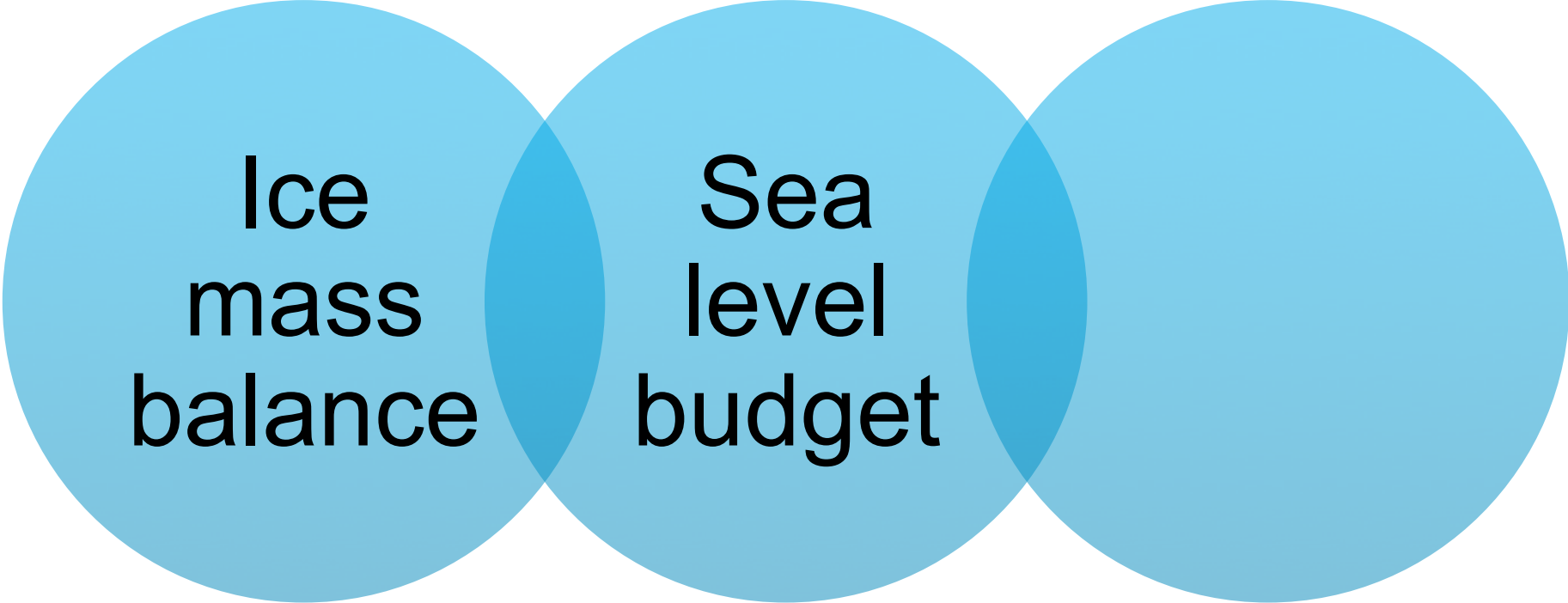
Creating a problem!

- Both OSISAF and SICCI will release a SIC dataset by the end of 2016.
- OSISAF will release the SMMR +SSM/I+SSMIS time-series (1979-2015).
- SICCI will release the AMSRE +AMSR2 time-series (2002-2015).
- As much as possible, both data records will be based on the same software, originating from OSISAF and further developed in SICCI.
- Both projects contribute to R&D.

Global Mean Sea Level budget over 2005-2013 (CCI)

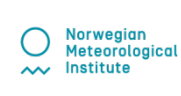
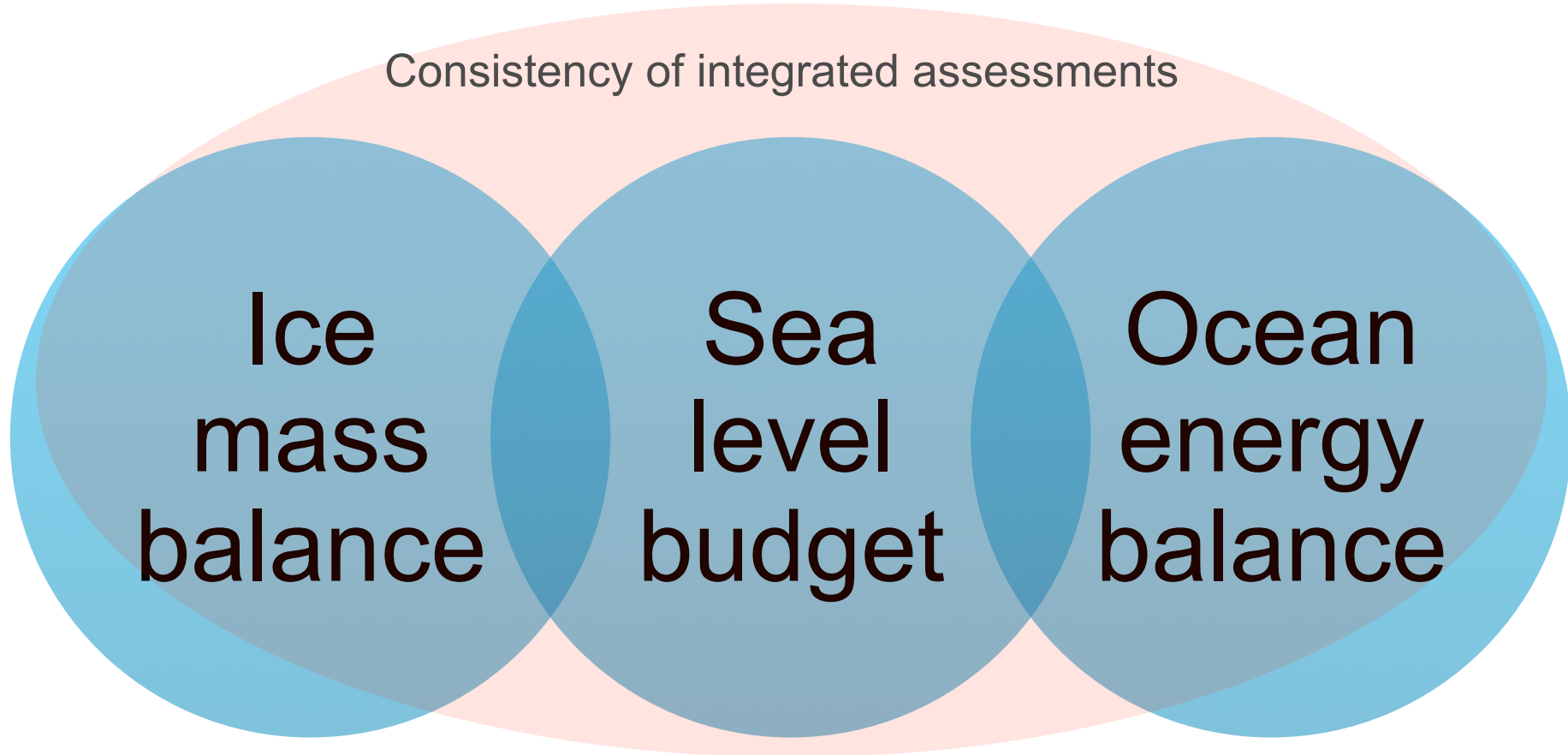


Suite of cross-ECV integrated assessments



Suite of cross-ECV integrated assessments

Consistency of integrated assessments



Summary & recommendations

Innovation across marine ECVs in uncertainty and progress in exploitation in major projects

Programmatic “solution” on CCI sea ice products isn’t scientifically sensible – **Recommendation: reconsider**

High value from integrated assessment of IMB, partly using CCI products – ideas to extend to Sea Level budget explored at ISSI – could further extend to overlapping question of ocean heat contribution to global energy budget, and aim for consistency across 3 linked integrative assessments – **Recommendation: review options for contribution to energy budget adjacent to SL and IMB**

