Global Energy and Water Exchanges Project

GEWEX WCRP

WCRP World Climate Research Programme

WMO IOC ICSU International Council for Science

GEWEX DATA **ANALYSIS** PANEL
Report to the SSG

GDAP GEWEX Data Analysis Panel

Rémy Roca (CNRS) remy.roca@legos.obs-mip.fr

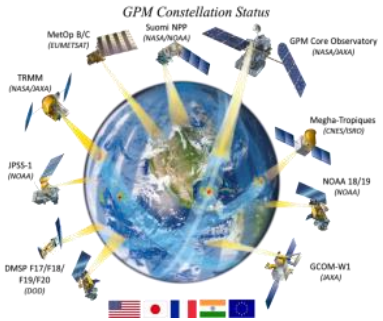
Tristan L'Ecuyer (UW-AOS) tristan@aos.wisc.edu

and the panel members

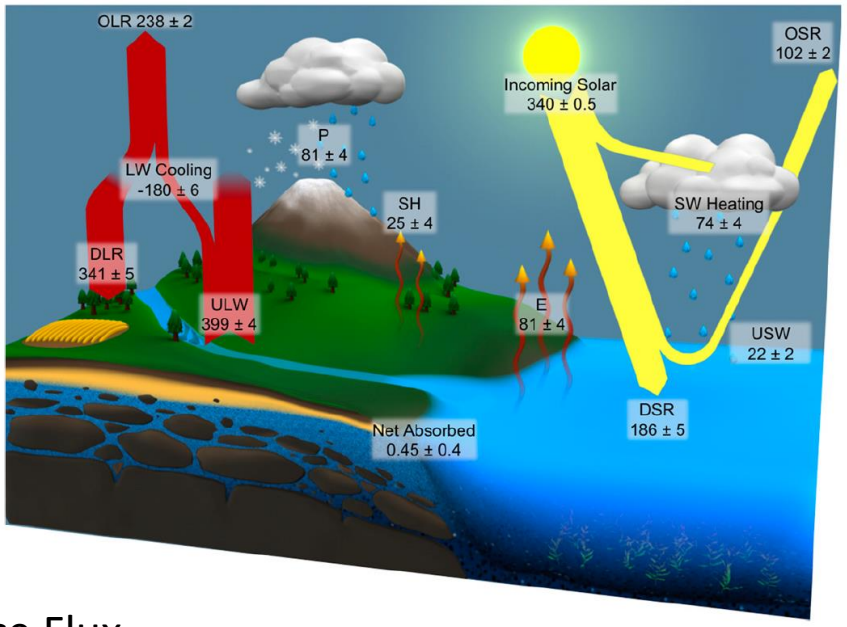
The GDAP vision

Research panel, observations centric, climate-oriented, consistency-driven, global and worldwide

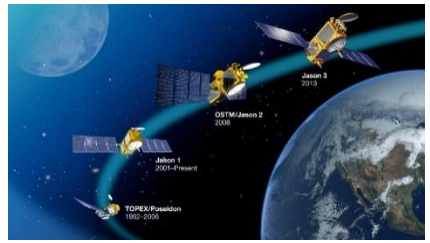
Precipitation



Radiation

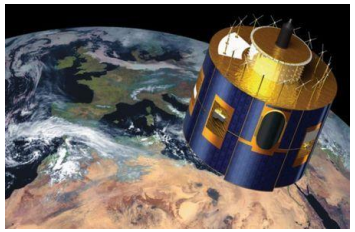


Sea level

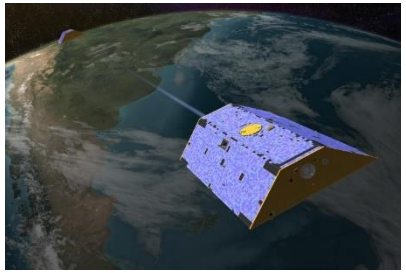


Surface Flux

Cloud



Gravimetry



The GDAP structure

Co chairs: R Roca (France) and T. L'Ecuyer (US)

Panel members: I. Trigo (Port), W. Dorigo (Austria), C. Kummerow (US), H. Masunaga (Jap), A. Hedeinger (US), S. Kato (US), Zhou (Chi), ES Chung (Kor)

… A Behrangi (US)

Leads and co-leads Contributors: C. Laconnelli (Ita), U Schneider (Ger), T Boyer (US), B Meyssignac (Fr) , M. Schroder (Ger) , B Ho (US), H Brogniez (Fr), B Khan (US)

Permanentmly invited (and participating): G Stephens (US)

Surface networks

- BSRN
- GPCC
- ISMN

Assessments

- Water vapor
- Precipitation
- Earth Energy Imbalance

Projects

- The Integrated Product
- ISCCP-NG

Outline

1- Overview

2- Status of the activity

- Meetings & GDAP Annual meeting
- Surface networks
- Assessments
- Projects
- New initiatives

3- Questions to SSG

Meetings and Workshops

When	Where	What	Role
Feb	Geneva, Swisserland	GEWEX SSG	Participant
Marc	Marrakech, Morocco	GCOS Joint multi panel meeting	Participant
July	Maryland,US	DOE Precipitation Metrics Workshop	Participant
Oct	Oxford, UK	GAP workshop	Participant
Oct	Darmstadt, Germany	ISCCP-NG Workshop	Co-organizer
Jan	Tucson AZ, US	GDAP panel meeting	Lead Organizer

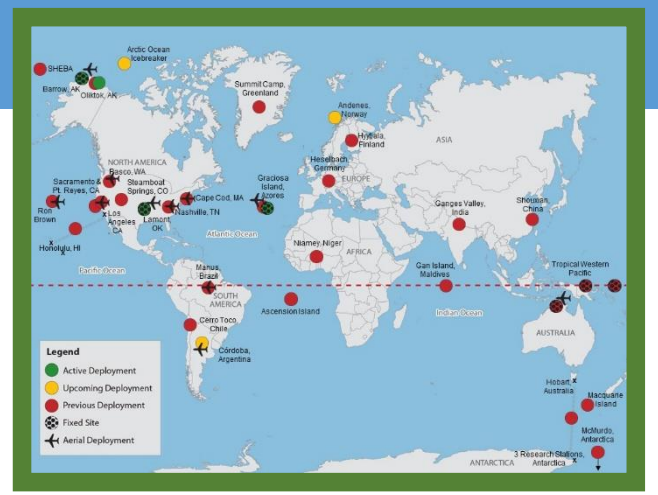
Status of the Activity: the GDAP annual meeting

3 days in Jan 2020 in Tucson, AZ
Hosted by Ali Behrangi, UA

Sucessfull implementation of the new meeting format with more science invited presentations, including agencies (e.g. DOE ARM)
Invitation of GASS Chair (also at U A) for discussion

The GD **Analysis** Panel is emerging as planned
After rescoping and consolidating activities new format, new IP
We are now articulating our own science questions
Land-atmo; Obs constraint on feedback & ECS, Cloud dynamics
Action is for : Tristan and Rémy to draft questions based on dicussions

Surface networks



BSRN (radiation)

New director Christian LANCONELLI since 2018

Looking for a Deputy director

possibily: Amelie Driemel

Moving towards a harmonization of surface energy balance measurement over land and sea

Christian Lanconelli[1] and Robert A. Weller[2]

[1]European Commission, Joint Research Centre, Ispra, Italy

[2]Woods Hole Oceanographic Institution, Woods Hole, MA, USA

EGU 2020 Wien, Austria
Splinter meeting - SMI21
Wed Apr 6, 8.30-10.15

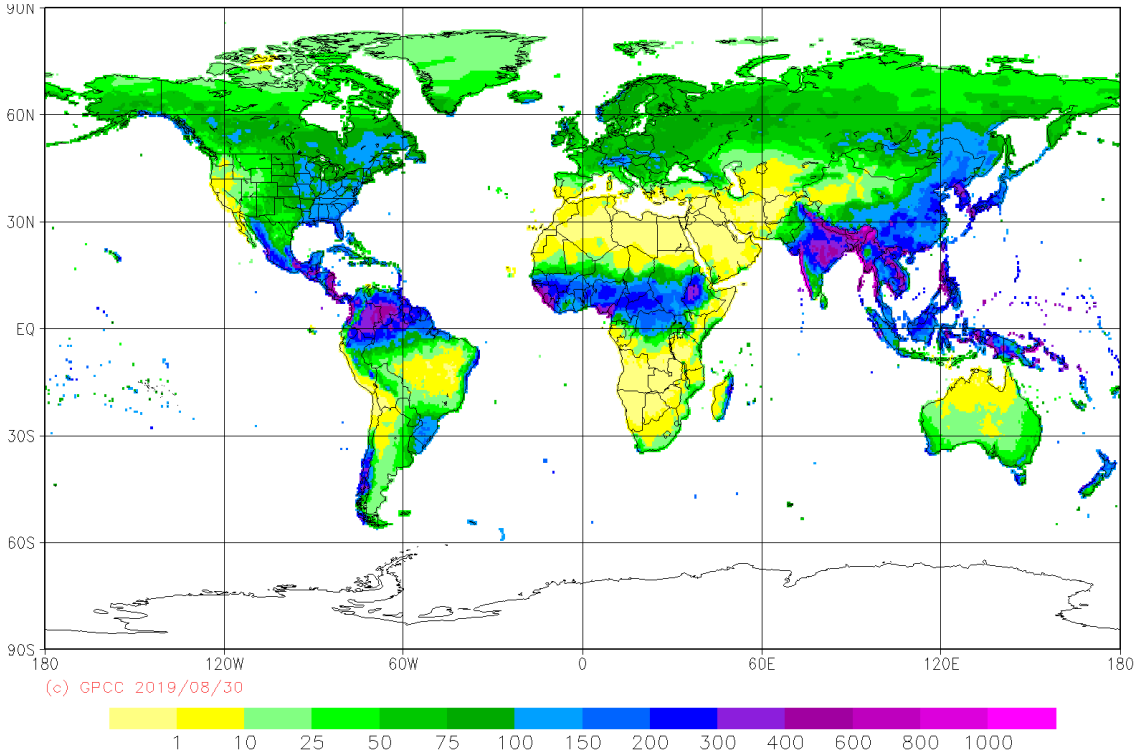
Invited only:
28 seats available

GCOS action set during JPM

- Community need
- Practice
- Expectation
- Standards

Surface networks

Global Precipitation Climatology Center's Precipitation Climatology V.2019 for July on a 0.25° grid



- The new release V.2020 of GPCC's product portfolio
  Precipitation Climatology,
  Full Data Monthly for 1891-2018,
  Monitoring Product,
  Full Data Daily for 1982-2018 (using SPHEREMAP analysis method, as for other products)
  is now scheduled to become available in March 2020

(currently working on the integration of large data sets for i.e. Brazil, Canada, Poland, Iran)

International Soil Moisture Network

ISMN transition from Austria to Germany

No connection with SoilMosture Network US. Recommended to reconnect.

The GDAP on-going assessments

Water vapor

Lead by M Schroder, B Ho and H Brogniez
Report anticipated in 2021

Precipitation

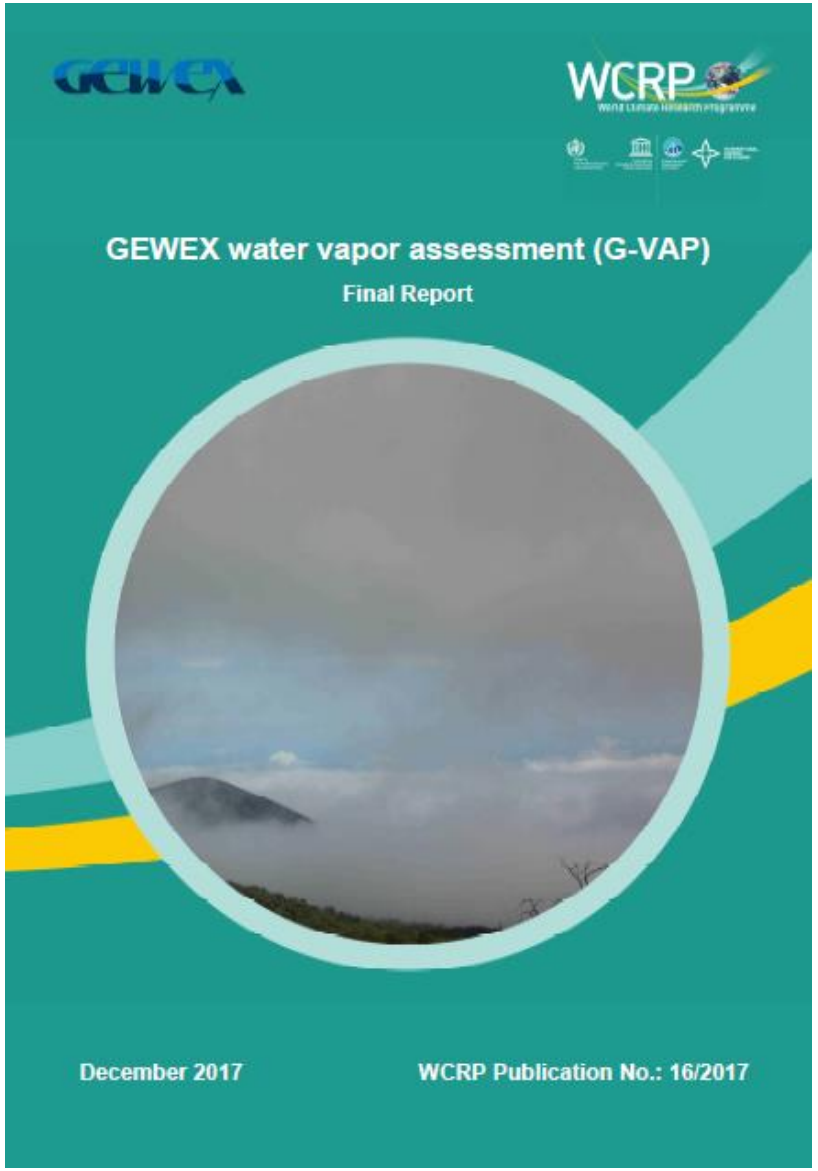
A joint effort between IPWG and GEWEX/GDAP. (Haddad and Roca, 2017)
Lead by H. Masunaga et al. for GDAP

Strong links with the GC Extremes (Lisa Alexander et al.)
Based on the FROGS database 1° / 1 Day
First report June 2020

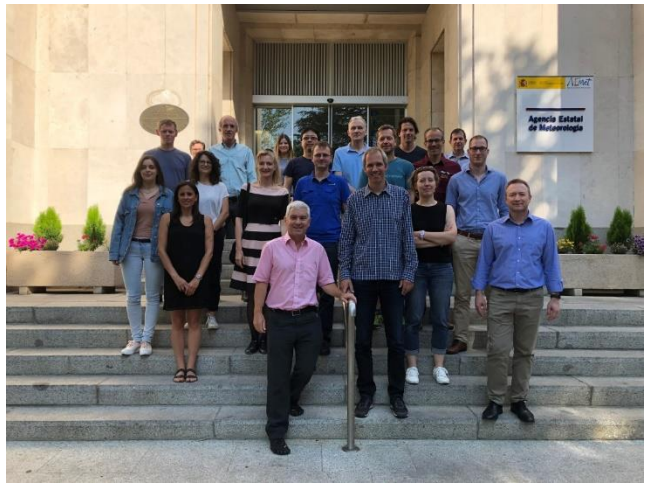
Earth Energy Imbalance

Lead by T. Boyer and B Meyssignac
Team members (as of Jan 2020): S. Kato (NASA; GDAP panel) M. Hakuba (JPL), R Roca (CNRS)…
Extend to the ocean reanalysis community, cryopshere and land…

The Water Vapor assessment



GEWEX water vapor assessment (G-VAP) workshop at AEMET, Madrid, Spain on 13+14 June 2019!



Original goal: submit WCRP report in late 2020/early 2021.

WCRP report submission in fall 2021.

EUMETSAT

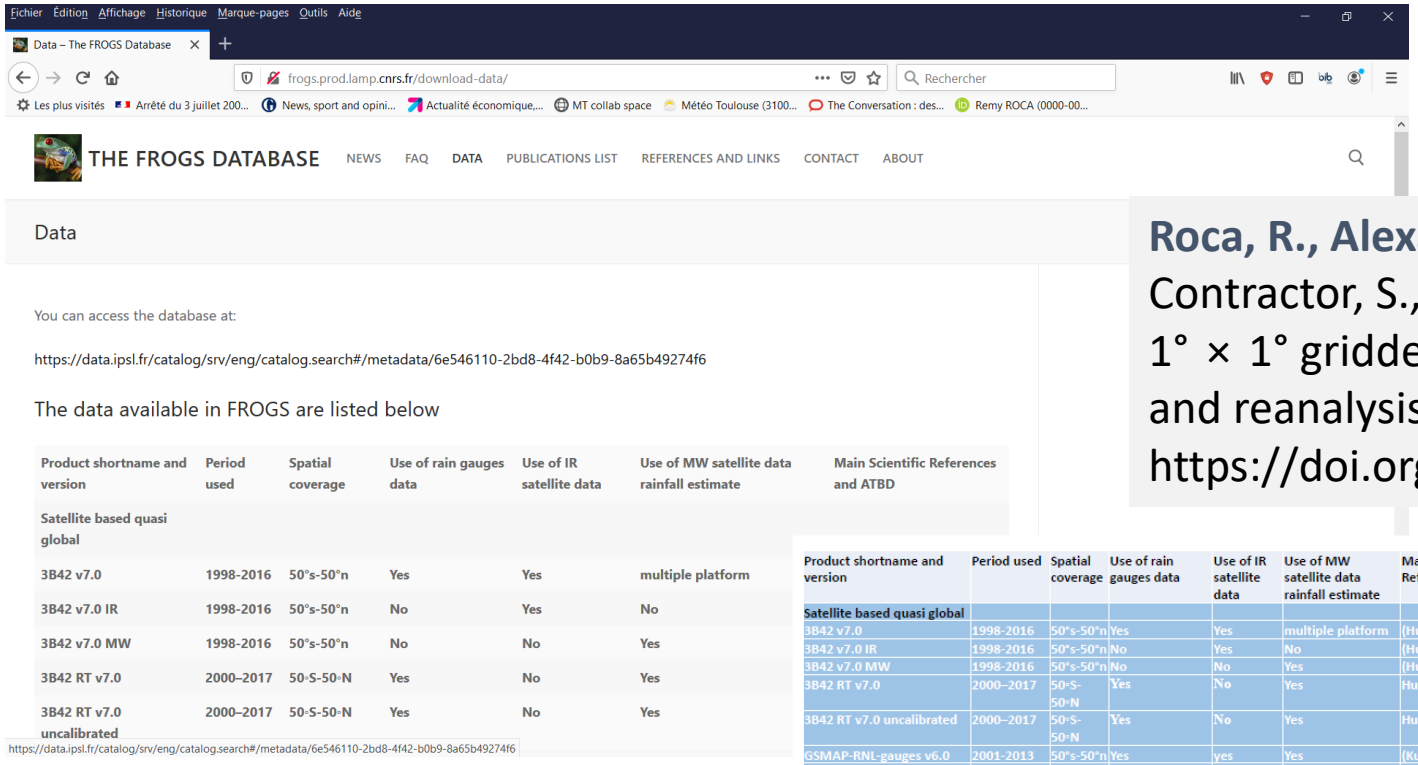
EUMETSAT CM SAF CLIMATE MONITORING

NOAA NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION U.S. DEPARTMENT OF COMMERCE

esa

Deutscher Wetterdienst DWD

The Precipitation Assessment: the FROGS database



Product shortname and version	Period used	Spatial coverage	Use of rain gauges data	Use of IR satellite data	Use of MW satellite data rainfall estimate	Main Scientific References and ATBD
Satellite based quasi global						
3B42 v7.0	1998-2016	50°s-50°n	Yes	Yes	multiple platform	(Huffman et al. 2009)
3B42 v7.0 IR	1998-2016	50°s-50°n	No	Yes	No	(Huffman et al. 2009)
3B42 v7.0 MW	1998-2016	50°s-50°n	No	No	Yes	(Huffman et al. 2009)
3B42 RT v7.0	2000–2017	50°S-50°N	Yes	No	Yes	Huffman et al. (2007)
3B42 RT v7.0 uncalibrated	2000–2017	50°S-50°N	Yes	No	Yes	Huffman et al. (2007)

https://data.ipsl.fr/catalog/srv/eng/catalog.search#/metadata/6e546110-2bd8-4f42-b0b9-8a65b49274f6

Roca, R., Alexander, L. V., Potter, G., Bador, M., Jucá, R., Contractor, S., **Bosilovich, M. G.**, and Cloché, S.: FROGS: a daily 1° × 1° gridded precipitation database of rain gauge, satellite and reanalysis products, Earth Syst. Sci. Data, 11, 1017-1035, https://doi.org/10.5194/essd-11-1017-2019, **2019**

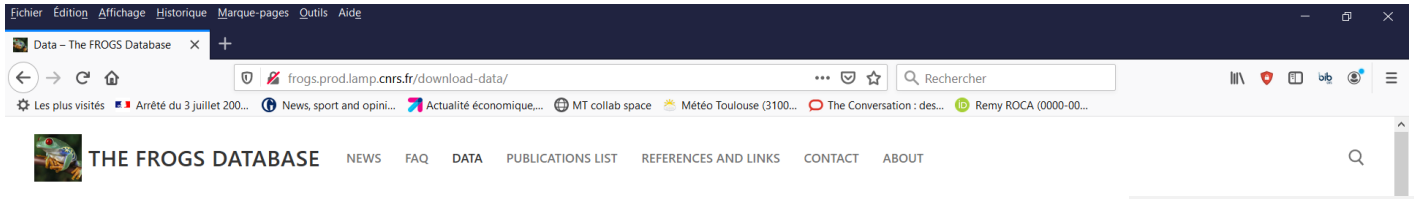
Product shortname and version	Period used	Spatial coverage	Use of rain gauges data	Use of IR satellite data	Use of MW satellite data rainfall estimate	Main Scientific References and ATBD
Satellite based quasi global						
3B42 v7.0	1998-2016	50°s-50°n	Yes	Yes	multiple platform	(Huffman et al. 2009)
3B42 v7.0 IR	1998-2016	50°s-50°n	No	Yes	No	(Huffman et al. 2009)
3B42 v7.0 MW	1998-2016	50°s-50°n	No	No	Yes	(Huffman et al. 2009)
3B42 RT v7.0	2000–2017	50°S-50°N	Yes	No	Yes	Huffman et al. (2007)
3B42 RT v7.0 uncalibrated	2000–2017	50°S-50°N	Yes	No	Yes	Huffman et al. (2007)
GSMAP-RNL-gauges v6.0	2001-2013	50°s-50°n	Yes	yes	Yes	(Kubota et al., 2007)
GSMAP-RNL-no gauges v6.0	2001-2013	50°s-50°n	No	yes	Yes	(Kubota et al., 2007)
GSMAP-NRT-gauges v6.0	2001-2017	50°s-50°n	Yes	yes	Yes	(Kubota et al., 2007)
GSMAP-NRT-no gauges v6.0	2001-2017	50°s-50°n	No	yes	Yes	(Kubota et al., 2007)
PERSIANN CDR v1 r1	1983-2017	50°s-50°n	yes	Yes	No	(Ashouri et al., 2015)
CMORPH V1.0, RAW	1998-2017	60°s-60°n	No	Yes	Yes	(Xie et al., 2017)
CMORPH V1.0, CRT	1998-2017	60°s-60°n	Yes	Yes	Yes	(Xie et al., 2017)
GPCP 1DD CDR v1.3	1997-2017	90°s-90°n	Yes	Yes	One platform	(Huffman et al. 2001)
IMERG v6 early uncal	2000-2018	90°s-90°n	No	Yes	multiple platform	(Huffman et al. 2015)
IMERG v6 late uncal	2000-2018	90°s-90°n	No	Yes	multiple platform	(Huffman et al. 2015) New!
IMERG v6 final uncal	2000-2018	90°s-90°n	No	Yes	multiple platform	(Huffman et al. 2015)
IMERG v6 final	2000-2018	90°s-90°n	Yes	Yes	multiple platform	(Huffman et al. 2015)
Land Only						
CHIRPS v2.0	1981-2016	50°s-50°n	Yes	Yes	No	(Funk et al. 2015)
CHIRP v2.0	1981-2016	50°s-50°n	Climatology	Yes	No	(Funk et al. 2015)
SM2RAIN-CCI	1998-2015	Global	No	No	No	(Ciabatta et al., 2018)

Ocean only						
HOAPS	1996-2014	ocean only	No	no	Yes	(Andersson et al., 2017)
Satellite based regional						
TAPEER v1.5	2012-2016	30°s-30°n	No	Yes	multiple platform	(Roca et al, 2018)
TAMSAT v2	1983-2017	Africa	Yes	Yes	No	(Maidment et al;. 2017)
TAMSAT v3	1983-2017	Africa	Yes	Yes	No	(Maidment et al;. 2017)
ARC v2	1983-2017	Africa	Yes	Yes	No	Novella andThiaw, 2013
COSH	2000–2018	South America	Yes	Yes	Yes	Vila et al. (2009)
Rain gauges based						
CPC	1979–2017	60°s-90°n	Yes	no		Xie et al (2010)
GPCC First Guess v1	2009–2016	60°s 90°n	Yes	No		Becker et al., 2013
GPCC Full Daily v1	1982–2013	60°s 90°n	Yes	No		Becker et al., 2013
GPCC Full Daily V2018	1982-2016	60°s-90°n	Yes	No		(Schneider et al., 2018)
REGEN long	1950-2013	60°s-90°n	Yes	No		(Contractor et al., 2018)
REGEN	1950-2013	60°s-90°n	Yes	No		(Contractor et al., 2018)
Atmospheric reanalysis						
MERRA 1	1979-2015	global				Rienecker et al. (2011)
MERRA 2	1980-2017	global				Gelaro et al. (2017)
JRA-55	1958-2017	global				Kobayahi et al. (2015)
ERA Interim	1979-2017	Global				Dee et al (2011)
CFSR	1979-2017	global				Saha et al. (2010)

Access the dataset : http://dx.doi.org/10.14768/06337394-73A9-407C-9997-0E380DAC5598

More information at: http://frogs.ipsl.fr

The Precipitation Assessment: the FROGS database



Data

You can access the database at:

https://data.ipsl.fr/catalog/srv/eng/catalog.search#/metadata/6e546110-2bd8-4f42-b0b9-8a65b49274f6

The data available in FROGS are listed below

Product shortname and version	Period used	Spatial coverage	Use of rain gauges data	Use of IR satellite data	Use of MW satellite data rainfall estimate	Main Scientific References and ATBD
Satellite based quasi global						
3B42 v7.0	1998-2016	50°s-50°n	Yes	Yes		
3B42 v7.0 IR	1998-2016	50°s-50°n	No			
3B42 v7.0 MW	1998-2016	50°s-50°n				
3B42 RT v7.0	2000–2017					
3B42 RT v7.0 uncalibrated						

Roca, R., Alexander, …, Jucá, R., Contractor, …: FROGS: a daily 1° … of rain gauge, satellite … Syst. Sci. Data, 11, 1017-1035, …/essd-11-1017-2019, 2019

Include GPCP « IP » into FROGS
Extend FROGS: on going discussions wit Lisa Alexander and Mike Bosilovitch

						Main Scientific References and ATBD
				Yes	multiple platform	(Huffman et al. 2009)
				Yes	No	(Huffman et al. 2009)
			No	No	Yes	(Huffman et al. 2009)
		50°S-50°N	Yes	No	Yes	Huffman et al. (2007)
	2000–2017	50°S-50°N	Yes	No	Yes	Huffman et al. (2007)
GSMAP-RNL-gauges v6.0	2001-2013	50°s-50°n	Yes	yes	Yes	(Kubota et al., 2007)
GSMAP-RNL-no gauges v6.0	2001-2013	50°s-50°n	No	yes	Yes	(Kubota et al., 2007)
GSMAP-NRT-gauges v6.0	2001-2017	50°s-50°n	Yes	yes	Yes	(Kubota et al., 2007)
GSMAP-NRT-no gauges v6.0	2001-2017	50°s-50°n	No	yes	Yes	(Kubota et al., 2007)
PERSIANN CDR v1 r1	1983-2017	50°s-50°n	yes	Yes	No	(Ashouri et al., 2015)
CMORPH V1.0, RAW	1998-2017	60°s-60°n	No	Yes	Yes	(Xie et al., 2017)
CMORPH V1.0, CRT	1998-2017	60°s-60°n	Yes	Yes	Yes	(Xie et al., 2017)
GPCP 1DD CDR v1.3	1997-2017	90°s-90°n	Yes	Yes	One platform	(Huffman et al. 2001)
IMERG v6 early uncal	2000-2018	90°s-90°n	No	Yes	multiple platform	(Huffman et al. 2015)
IMERG v6 late uncal	2000-2018	90°s-90°n	No	Yes	multiple platform	(Huffman et al. 2015) New!
IMERG v6 final uncal	2000-2018	90°s-90°n	No	Yes	multiple platform	(Huffman et al. 2015)
IMERG v6 final	2000-2018	90°s-90°n	Yes	Yes	multiple platform	(Huffman et al. 2015)
Land Only						
CHIRPS v2.0	1981-2016	50°s-50°n	Yes	Yes	No	(Funk et al. 2015)
CHIRP v2.0	1981-2016	50°s-50°n	Climatology	Yes	No	(Funk et al. 2015)
SM2RAIN-CCI	1998-2015	Global	No	No	No	(Ciabatta et al., 2018)

Ocean only						
HOAPS	1996-2014	ocean only	No	no	Yes	(Andersson et al., 2017)
Satellite based regional						
TAPEER v1.5	2012-2016	30°s-30°n	No	Yes	multiple platform	(Roca et al, 2018)
TAMSAT v2	1983-2017	Africa	Yes	Yes	No	(Maidment et al;. 2017)
TAMSAT v3	1983-2017	Africa	Yes	Yes	No	(Maidment et al;. 2017)
ARC v2	1983-2017	Africa	Yes	Yes	No	Novella andThiaw, 2013
COSH	2000–2018	South America	Yes	Yes	Yes	Vila et al. (2009)
Rain gauges based						
CPC	1979–2017	60°s-90°n	Yes	no		Xie et al (2010)
GPCC First Guess v1	2009–2016	60°s 90°n	Yes	No		Becker et al., 2013
GPCC Full Daily v1	1982–2013	60°s 90°n	Yes	No		Becker et al., 2013
GPCC Full Daily V2018	1982-2016	60°s-90°n	Yes	No		(Schneider et al., 2018)
REGEN long	1950-2013	60°s-90°n	Yes	No		(Contractor et al., 2018)
REGEN	1950-2013	60°s-90°n	Yes	No		(Contractor et al., 2018)
Atmospheric reanalysis						
MERRA 1	1979-2015	global				Rienecker et al. (2011)
MERRA 2	1980-2017	global				Gelaro et al. (2017)
JRA-55	1958-2017	global				Kobayahi et al. (2015)
ERA Interim	1979-2017	Global				Dee et al (2011)
CFSR	1979-2017	global				Saha et al. (2010)

Access the dataset : http://dx.doi.org/10.14768/06337394-73A9-407C-9997-0E380DAC5598
More information at: http://frogs.ipsl.fr

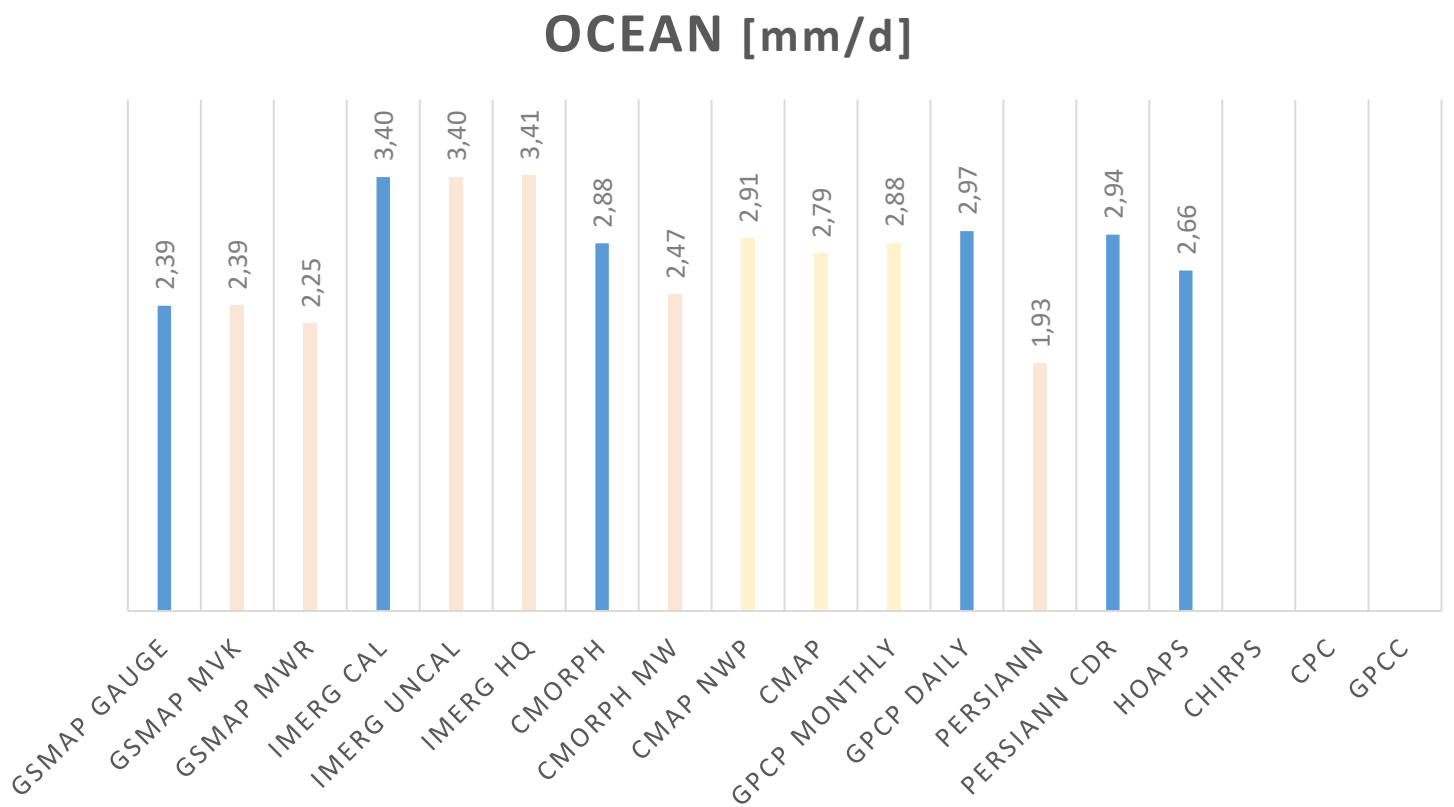
The Precipitation Assessment: global numbers

Table 1. Conditional mean precipitation (>1 mm d^{-1}) for the 2012–2016 period over tropical land. Mean, standard deviation and coefficient of variation (or normalized standard devitation) are also reported for the ensemble of all the products and for the sub-set of the ensemble defined in the text.

Name	Conditional mean (mm d^{-1})
TAPR	10.0
TMPA	9.8
GSMArtg	9.3
CMORg	9.5
MSWE	9.7
GPCPun	10.9
PERS	8.2
CHIRg	9.2
GPCC	11.9
GPCCfg	9.1
Ens Mean	9.8
Ens std	1.0
Ens cvar (%)	10.6
sEns Mean	9.7
sEns std	0.3
sEns cvar (%)	2.7

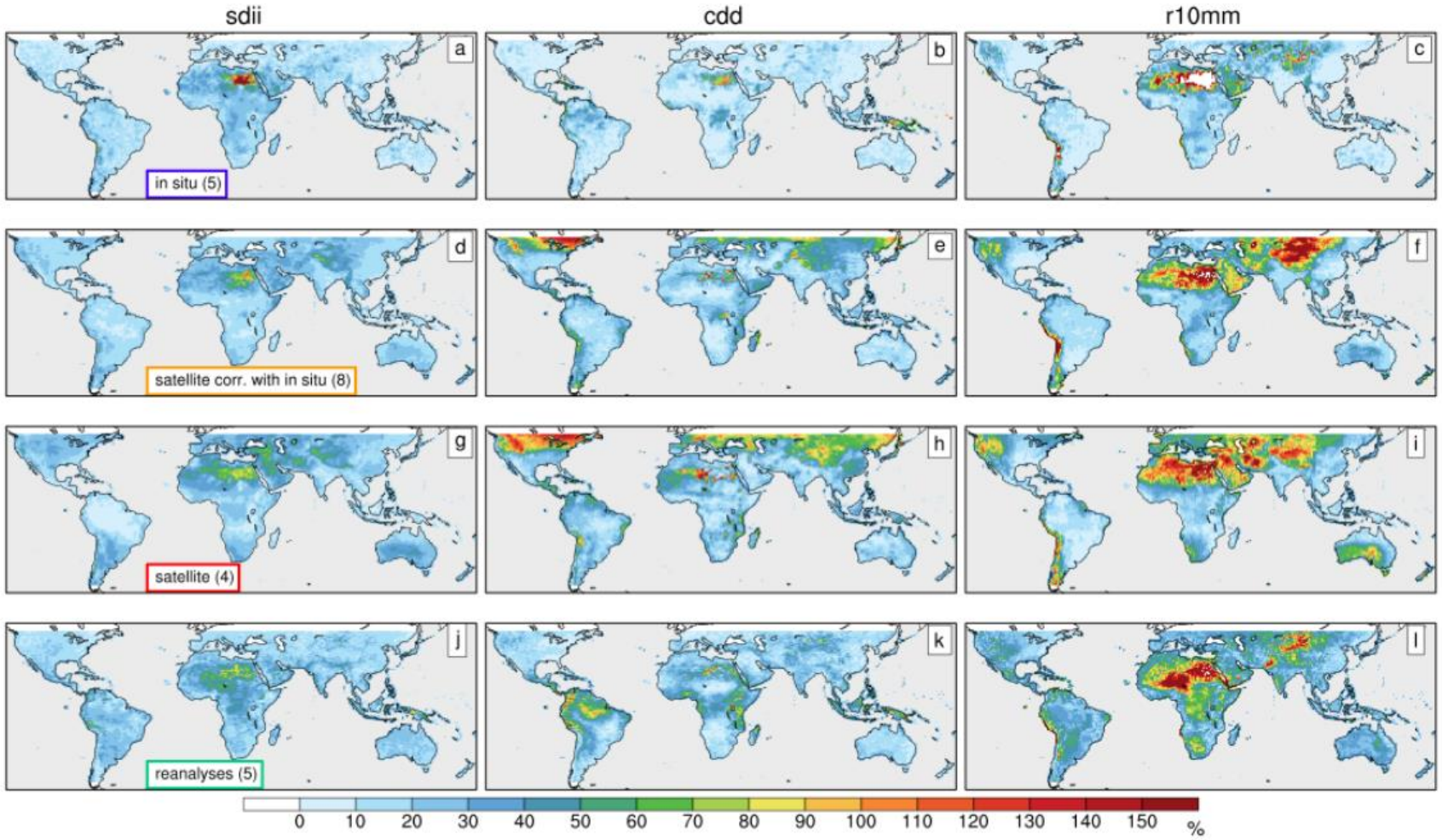
Roca 2019

- Global (60°S-60°N) ocean precipitation (1998-2017)



Courtesy H Masunaga

The Precipitation Assessment: extreme precipitation



Alexander et al., 2020

Coefficient of variation (%) calculated over the 2001-2013 climatologies from the different datasets for (left) simple daily intensity index (SDII), (middle) consecutive dry days (CDD) and (right) days above 10mm (R10mm)

In general, the results of this study show that global space-based precipitation products show the potential for climate scale analyses of extremes. While we recommend caution for all products dependent on their intended application, this particularly applies to reanalyses which show the most divergence across results.

Precipitation assessment: focus Collection at ERL

Extreme Precipitation Observations and Process Understanding

Guest Editors
Lisa Alexander University of New South Wales
Rémy Roca Université de Toulouse III
Sonia Seneviratne ETH Zurich
Andreas Becker Deutscher Wetterdienst

Papers

Open access
Inter-product biases in global precipitation extremes Hirohiko Masunaga *et al* 2019 *Environ. Res. Lett.* **14** 125016
View abstract View article PDF

Open access
On the use of indices to study extreme precipitation on sub-daily and daily timescales Lisa V Alexander *et al* 2019 *Environ. Res. Lett.* **14** 125008
View abstract View article PDF

Open access
Exploring trends in wet-season precipitation and drought indices in wet, humid and dry regions Chris Funk *et al* 2019 *Environ. Res. Lett.* **14** 115002
View abstract View article PDF

Open access
Intercomparison of daily precipitation persistence in multiple global observations and climate models Heewon Moon *et al* 2019 *Environ. Res. Lett.* **14** 105009
View abstract View article PDF

Open access
Estimation of extreme daily precipitation thermodynamic scaling using gridded satellite precipitation products over tropical land Rémy Roca 2019 *Environ. Res. Lett.* **14** 095009
View abstract View article PDF

Open access
Intensification of precipitation extremes in the world's humid and water-limited regions Markus G Donat *et al* 2019 *Environ. Res. Lett.* **14** 065003
View abstract View article PDF

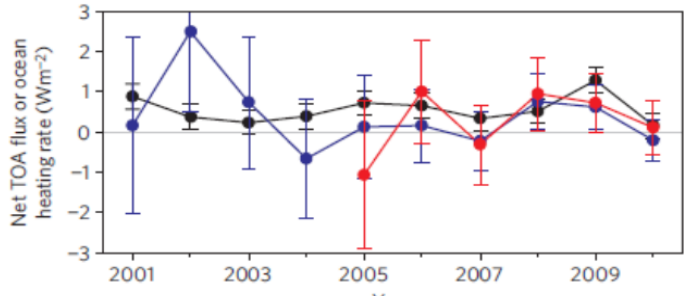
Open access
On the use of satellite, gauge, and reanalysis precipitation products for drought studies Saeed Golian *et al* 2019 *Environ. Res. Lett.* **14** 075005
View abstract View article PDF

Open access
Identifying changing precipitation extremes in Sub-Saharan Africa with gauge and satellite products Laura Harrison *et al* 2019 *Environ. Res. Lett.* **14** 085007
View abstract View article PDF

Draft Report to be released June 2020

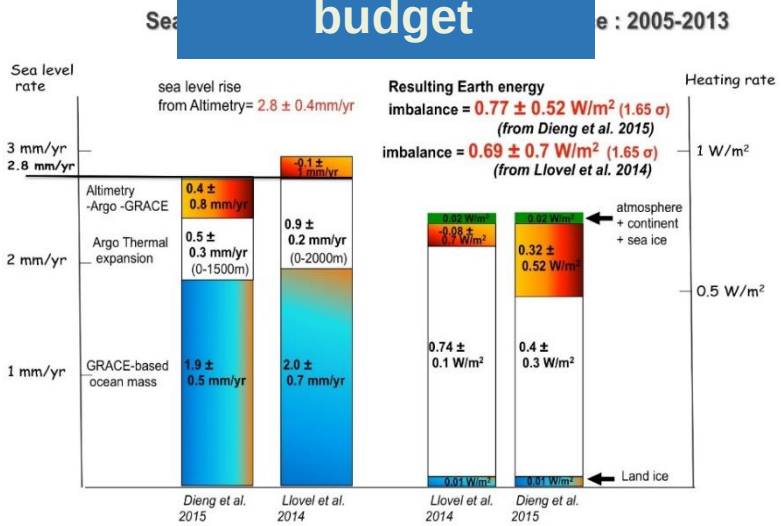
Earth energy imbalance: a new GDAP assessment

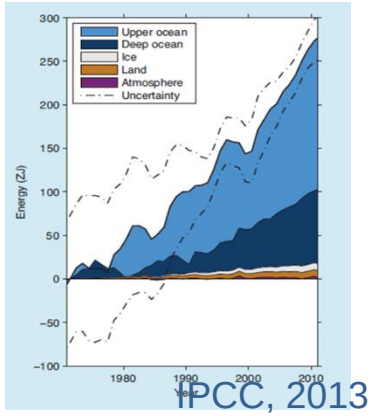
Radiation at TOA



Loeb et al., 2012

Sea level budget





Storage Inventory (OHC)

IPCC, 2013

Earth energy imbalance: a new GDAP assessment

GDAP meeting in 2017 (NCAR, CO)

Invited the CLIVAR/CONCEPT-HEAT team

Start the Ocean Obs paper

Initiate the Toulouse EEI Meeting

GEWEX Cannmore, OSConference 2018

Scoping of the Ocean Obs paper

R.Roca, K. Von Schuckmann + Help from T. L'Ecuyer, b. Meyssignac

WCRP World Climate Research Programme · CLIVAR · GEWEX · CliC · SPARC Stratosphere-troposphere Processes And their Role in Climate

Final report on the WCRP workshop
"The Earth's Energy Imbalance and its implications"
13 – 16 November 2018, Toulouse, France

Sponsors:

esa · MERCATOR OCEAN INTERNATIONAL · cnes CENTRE NATIONAL D'ÉTUDES SPATIALES

REVIEW ARTICLE
Front. Mar. Sci., 20 August 2019 | https://doi.org/10.3389/fmars.2019.00432

Check for updates

Download Article · Export citation

4,630 TOTAL VIEWS

Am score 29

View Article Impact

of your Research

Suggest a Research Topic >

Measuring Global Ocean Heat Content to Estimate the Earth Energy Imbalance

Benoit Meyssignac[1*], Tim Boyer[2], Zhongxiang Zhao[3], Maria Z. Hakuba[4,5], Felix W. Landerer[4], Detlef Stammer[6], Armin Köhl[6], Seiji Kato[7], Tristan L'Ecuyer[8], Michael Ablain[9], John Patrick Abraham[10], Alejandro Blazquez[1], Anny Cazenave[1], John A. Church[11], Rebecca Cowley[12], Lijing Cheng[13], Catia M. Domingues[14,15,16], Donata Giglio[17], Viktor Gouretski[18], Masayoshi Ishii[19], Gregory C. Johnson[20], Rachel E. Killick[21], David Legler[22], William Llovel[1], John Lyman[20,23], Matthew Dudley Palmer[21], Steve Piotrowicz[22], Sarah G. Purkey[24], Dean Roemmich[17], Rémy Roca[1], Abhishek Savita[14,16], Karina von Schuckmann[25], Sabrina Speich[26], Graeme Stephens[4], Gongjie Wang[27], Susan Elisabeth Wijffels[28] and Nathalie Zilberman[17]

[1]LEGOS, CNES, CNRS, UPS, IRD, Université de Toulouse, Toulouse, France
[2]NOAA National Centers for Environmental Information, Silver Spring, MD, United States
[3]Applied Physics Laboratory, University of Washington, Seattle, WA, United States
[4]Jet Propulsion Laboratory, California Institute of Technology, Pasadena, CA, United States
[5]Department of Atmospheric Science, Colorado State University, Fort Collins, CO, United States

Toulouse meeting Nov 2018

An assessment under GDAP

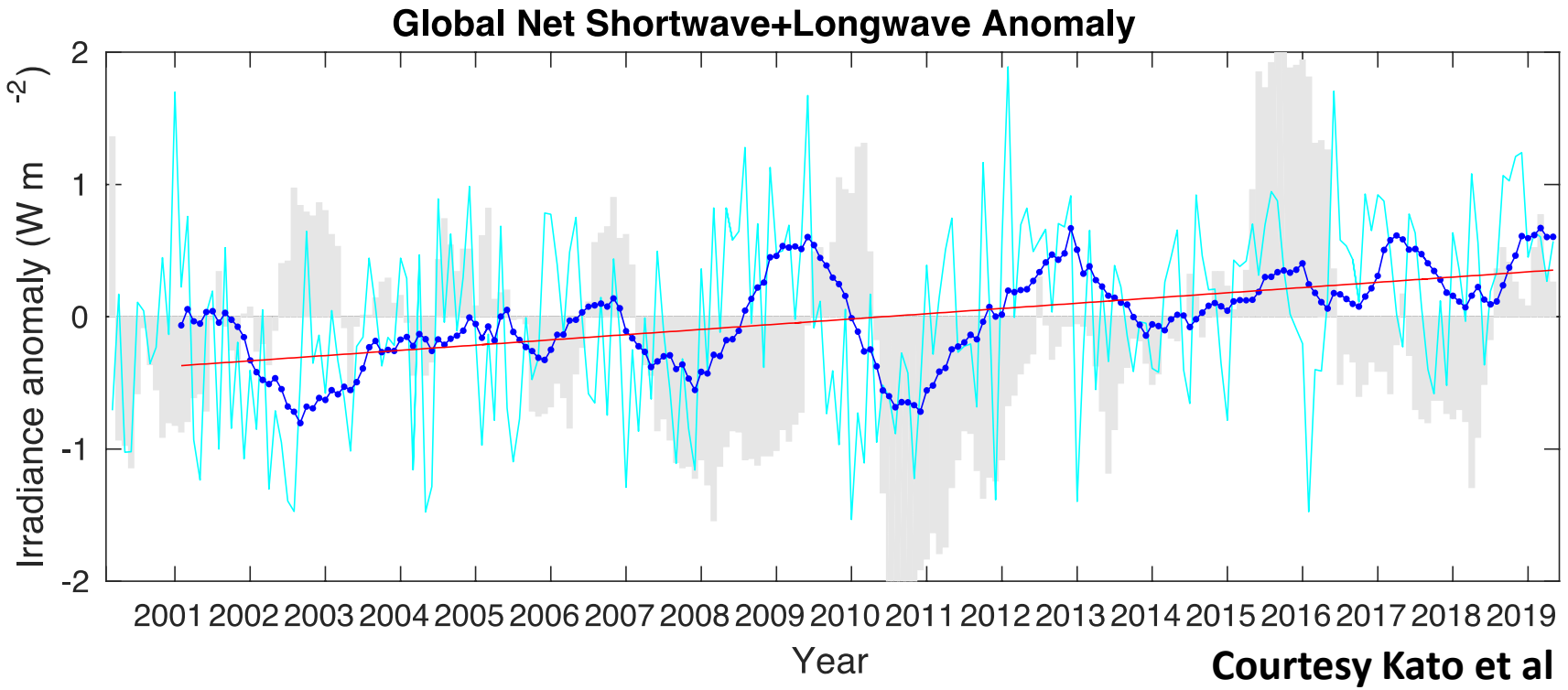
GDAP Meeting 2019 (in Jan 2020)

First discussions with the assessment team

Earth energy imbalance: a new GDAP assessment

Lead: T. Boyer (NOAA) and B. Meyssignac (CNES)

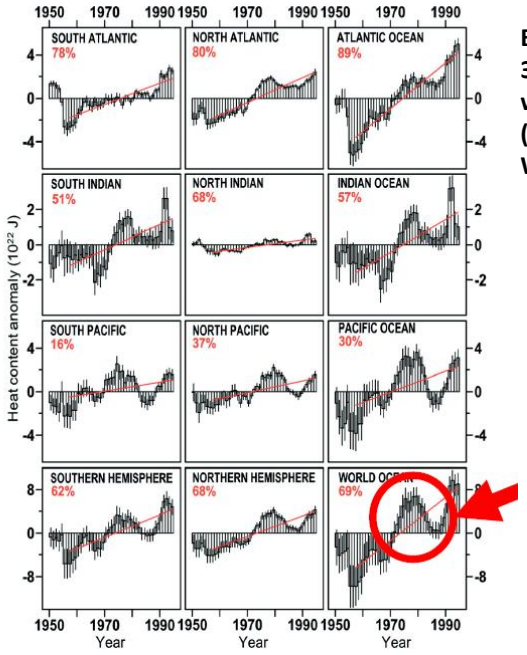
Assessment of the capability to document the EEI and its variability including trends at various scales using various approach including in-situ, satellite and reanalysis



Earth energy imbalance: a new GDAP assessment

Lead: T. Boyer (NOAA) and B. Meyssignac (CNES)
Team members (as of Jan 2020): S. Kato (NASA; GDAP panel) M. Hakuba (JPL), R Roca (CNRS)…
Extend to the ocean reanalysis community, cryopshere and land…

Assessment of the capability to document the EEI and its variability including trends at various scales using various approach including in-situ, satellite and reanalysis



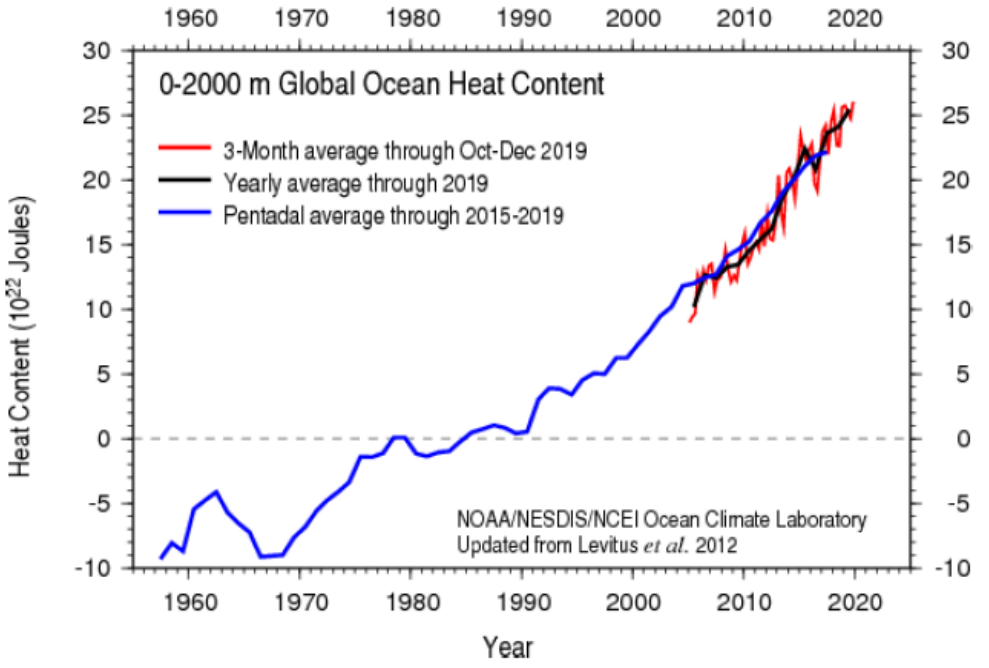
Between 1955 and 1998 the top 3000m of the World's Ocean warmed by approximately 200 ZJ (200 x 1021J) a rate of 0.3 Wm2annually.

Problem #2: Large increase/decrease in OHC centered around 1980 could not be duplicated in climate models

Improving Corrections for Instrumental Bias

Mechanical Bathythermograph (MBT)

Latest NCEI OHC Anomaly: through end of 2019



Courtesy Tim Boyer

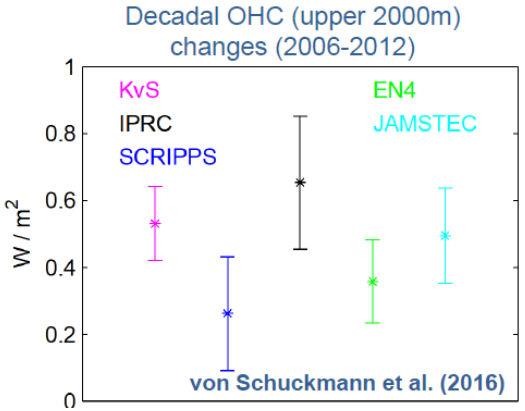
Earth energy imbalance: a new GDAP assessment

The scoping document of the assessment in under writing (since last week).

In the first phase focus on the Ocean Heat Content and next will include the other 10% (cryo;land)
And on the recent time span owing to the focus on multi-approach assessment (the Argo era)

What are the sensitivity of the in-situ global estimates to the gap-filling and region selection and QC ?

Calculate comprehensive and consistent (across product) uncertainty estimates including uncertainty due to data distribution



What are the adequate time/space scales to compare the EEI (from TOA) and the OHC variability ?

Perform comparisons (at the right time scales) between estimatesof OHC changes derived from in situ data, alti-GRACE and CERES for cross validation. (Include also ocean reanalyses?)

Then
Explore the historical data
Extend to the other reservoirs

TOA radiation product assessment -> a sub-effort of EEI assessment

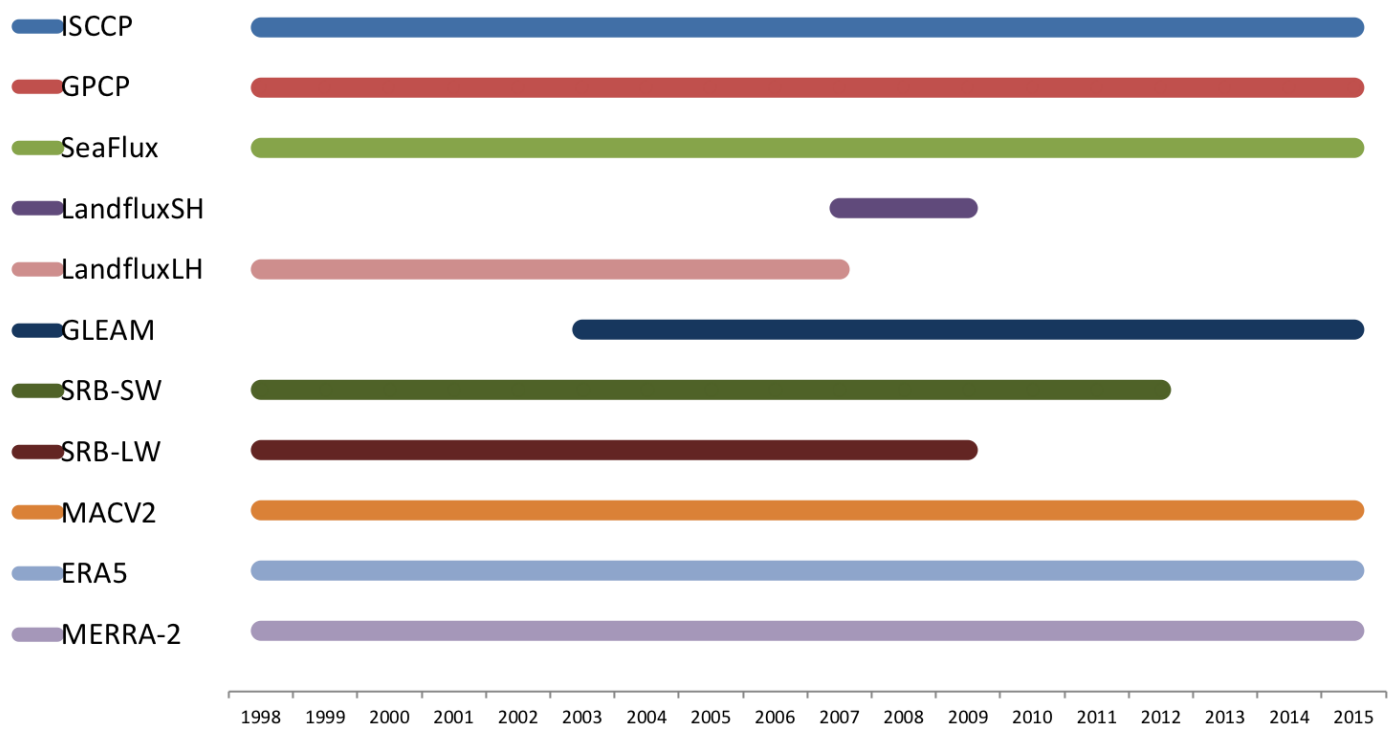
The Integrated Product Project

Long time project
Not as integrated as initially planned
A lot of technical problems

Lead by C. Kummerow & P Brown from CSU
With inputs from NCEI, P Stackhouse, S. Kinne, B Alder, etc…

Yet a dataset with multiple sources that do provide a global water and energy « observational » perspective at the 1°x1° 3 hourly resolution over 15 years +

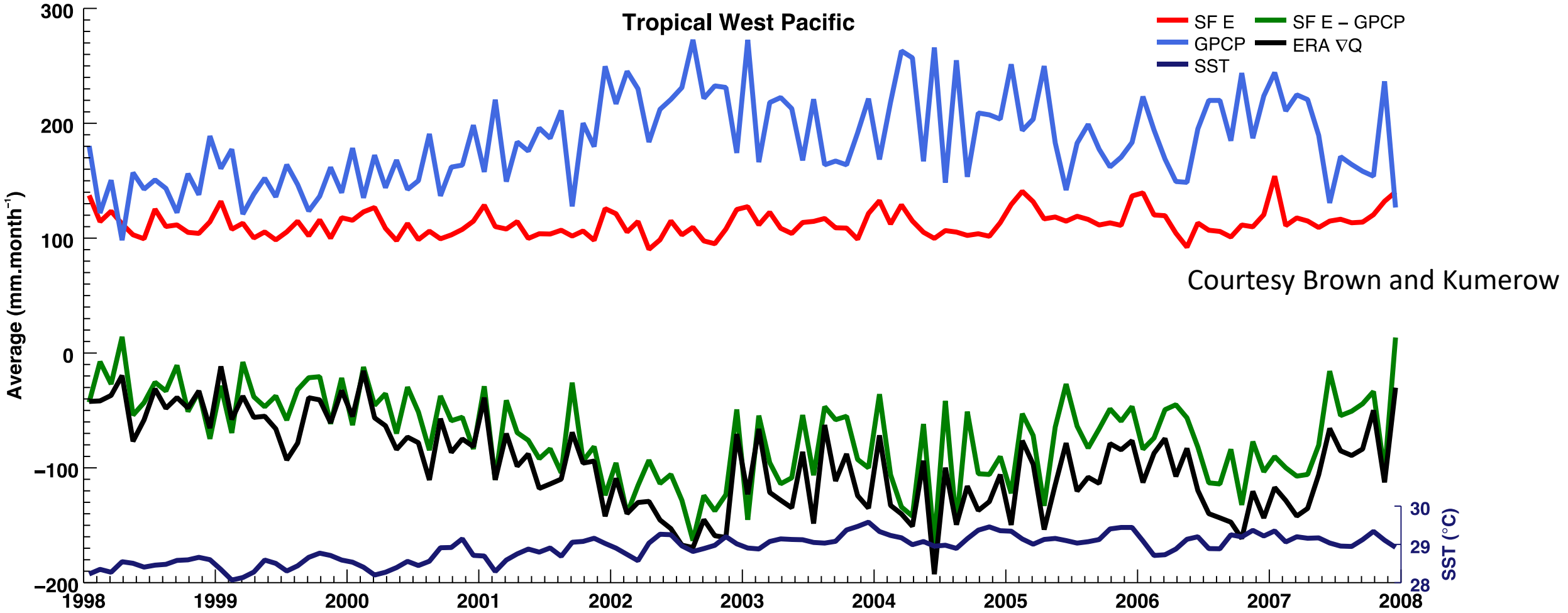
ftp://rain.atmos.colostate.edu/pub/pbrown/GEWEX_IP_2019.



See article in the GEWEX Newsletter

Substainability of the Product under discussion

The Integrated Product Project



Courtesy Brown and Kumerow

Decadal variability in the nature of precipitation ?

The Integrated Product: the Toledo meeting

Short Objective

Focusing on the land surface community, are the integrated products good enough to undertake process studies?, or do they need to be enhanced by high resolution in situ data sets

Organizing Committee:

- Christian Kummerow, Colorado State University, USA
- Francisco J. Tapiador, U. Castilla – La Mancha, Toledo, Spain
- Isabel Trigo, Instituto Português do Mar e da Atmosfera, Lisbon, Portugal
- Wouter Dorigo, Vienna University of Technology (TU Wien), Austria
- Jim Mather, ARM, Pacific Northwest National Laboratory, USA

Latest status (1/2020)

- **20 people have confirmed and registered. Have room for about 30 but we need to re-contact some of the original invites.**
- **From GEWEX Panels GHP Cuxart so far.**
- **Final logistics and participant list will be worked out in first 2 weeks of February**

Monday 16th, March

9:00 – 9:30	Introductions & Meeting Objectives
9:30 – 11:00	Presentations of Interest from Participants
11:00 – 11:30	Break
11:30 – 14:00	Presentations from Participants
14:00 – 15:30	Lunch
16:00 – 18:00	Presentations from Participants
20:30 –	Group Dinner (organized by self financed)

Tuesday 17th, March

9:00 – 11:00	Discussion 1 led by **Isabel Trigo**: *Exploring Land Surface Temperature to understand and monitor surface processes – combining LST with other remote sensing variables to infer hydrological regimes and assess surface energy fluxes*
11:00 – 11:30	Coffee Break
11:30 – 13:30	Discussion 2 led by **Wouter Dorigo**: *Soil-vegetation-atmosphere Feedbacks*
13:30 – 15:30	Lunch
15:30 – 17:30	Discussion 3: led by **Jim Mather**: *Linking high-resolution and global-scale measurements for improved data quality and multi-scale applications*
17:30 – 18:30	Wrap Up: An open discussion on topics of the day

Wednesday 18th, March

9:00 – 12:00	Discussion led by **Chris Kummerow**: *Integrated Product Future (how to best evolve the GEWEX Integrated product to maximize its utility)*

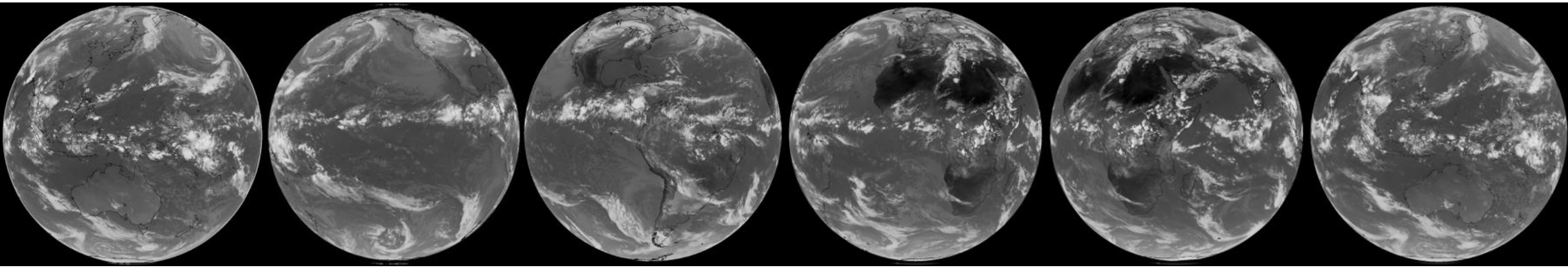
The ISSCP Next Gen project: A. Heidinger (NOAA) and B. Khan (JPL)

International Satellite Cloud Climatology Project – Next Generation workshop

EUMETSAT, 28-30 October 2019

The goal of the workshop is to define the scientific scope and the technical contents and methods needed for ISCCP-NG based on the recently augmented observational capability of the geostationary meteorological satellite ring.

A blend of scientists, operational and research spaces agencies and bodies



The ISSCP Next Gen project

Workshop Held

Website with Presentations Available

Workshop Summary Written

WCRP & CGMS 48 White Papers to be Submitted

2nd Workshop to be Planned

The Global Space-based Inter-Calibration System (GSICS) is optimistic that it can fulfill the radiometric calibration needs for ISCCP-NG. This will be discussed at the upcoming GSICS meeting in February 2020.

For the beginning of ISCCP-NG, the idea of an ensemble approach to L2 creation is desired. A strict list of requirements for any ensemble member is needed.

Photo taken at Lake Balaton in June 1980. Can you identify these characters?

Summary & New initiatives

The GD **Analysis** Panel is emerging as planned
After rescoping and consolidating activities : a new format, new IP

We are now articulating our own science questions
- Land-atmo
- Obs constraint on feedback & ECS,
- Cloud dynamics (Tristan and Rémy to draft questions based on dicussions)
- …

Radiation and Latent heat PROFILES assessment has been suggested

A PROES based on Toledo outputs?

A continental-scale land energy and water cycle closure assessment
- Closure constraints provide a critical sanity check on uncertainty estimates assigned to individual fluxes
- Prior results suggest that uncertainty estimates may be too optimistic at *continental* scales
- Extension to smaller regions and shorter timescales allows variability and trends to be assessed possibly revealing components to target for improvement
- Easily extended to reanalyses and CMIP

GDAP questions to SSG

Integrated Product
Need to recognize the *integration* as a job in itself

GCOS/GDAP
Any clarifications of the contours/relationship between GEWEX (WCRP ?) and GCOS is welcome. Same question as last year.

ISCCP-NG
The Level 1 data collection will be coordinated under the auspice of SCOPE-CM and CGMS
What kind of governance is envisionned for this level 1 data collection, inclusive of WCRP/GEWEX scientists ?

EEI Assessment
Need to engaged more with the reanalysis community (ocean & atmo)
Suggestions for names are welcome !