2nd GEWEX Earth Energy Imbalance Assessment Workshop

Logistics

When: June 1-5, 8:00 pm - 6:00 pm
Where: Pasadena, CA
Microsoft Teams meeting:

Day 1 Agenda, June 1, 2026

Setting the stage		
08:00	Registration	Wing Sze Lui-Small
08:30	Logistics	Maria Hakuba
08:40	NASA Welcome	TBD
08:50	JPL Welcome	TBD
09:00	Workshop goals & priorities	Maria Hakuba
09:20	Introductory Talk	Graeme Stephens (invited)
09:40	TBD	Clare Singer (invited)
10:00	**BREAK**	
Theme 1: Science of Earth's Energy Imbalance		
10:20	Inferred surface energy fluxes: uncertainties and EO-based land constraints	Susanna Winkelbauer (v)
10:40	The Atmosphere's Substantial Role in Interannual Variability of Earth's Energy Imbalance	Michael Mayer (v)
11:00	Declining wildfire and biomass burning aerosol emissions may explain increasing energy imbalance, and could fast track future global warming	Thorsten Mauritsen (v)
11:20	Constraining Ocean-Surface Net Heat Flux for Global and Regional EEI Closure	Lisan Yu
11:40	Discussion	
12:10	**LUNCH**	
Theme 1: Science of Earth's Energy Imbalance		
13:40	How Historical and Future Radiative Forcing Shapes the Evolution and Spatial Structure of Earth's Energy Imbalance	Lynn Hirose
14:00	Excessive 21st century solar absorption in the North Pacific basin attributed to poleward shift of the storm tracks and to aerosol emission decreases	George Tselioudis
14:20	Climate models with moderate climate sensitivity best simulate the magnitude of Earth's energy imbalance	Kyriaki Bimpiri
14:40	Limits in the Current EEI Observing System and Scientific Benefits of Continuity and Improved Accuracy, Precision and Stability	Benoit Meyssignac
15:00	Assessment of the Earth's Net Incoming Energy	Greg Kopp (v)
15:20	**BREAK**	
15:40	Posters Theme 1	
Theme 1: Science of EEI - Energy & Water Cycle focus		
16:20	An observational constraint on land surface energy partitioning reveals stronger future atmospheric heating over land	Weijie Zhang

16:40	Linking Earth's Energy Imbalance to Regional Energy and Water Cycle Pathways Using Inline Budget Diagnostics in GISS ModelE3	Kuniaki Inoue
17:00	Discussion Theme 1	
17:40	**ADJOURN**	

Day 2 Agenda, June 2, 2026

Theme 2: Advances in estimating Ocean Heat Content and Earth's heat inventory		
08:00	Registration	Wing Sze Lui-Small
08:30	Logistics	Maria Hakuba
08:40	Earth's heat inventory	Karina v. Schuckman (v) (invited)
09:00	Towards daily, near-global ground heat flux estimates from machine learning methods	Francisco José Cuesta-Valero (v)
09:20	Assessing regional Ocean Heat Content based on a consistently processed GRACE(-FO) gravity, satellite altimetry and in-situ Argo profile data record within a joint inversion scheme	Bernd Uebbing (v)
09:40	Estimating Ocean Heat Content from the Propagation Speed of Long-Range Internal Tides	Zhongxiang Zhao
10:00	**BREAK**	
Theme 2: In-situ Focus		
10:20	MapEval4OceanHeat (ME4OH): an objective assessment of mapping methods used to estimate ocean heat content change	Donata Giglio (invited)
10:40	Advances in spatio-temporal modeling of ocean heat content with Argo floats	Thea Sukianto
11:00	Locally stationary Argo Ocean heat content estimates: Modeling, validation and uncertainty quantification	Mikael Kuusela (v)
11:20	Updates and Improvements to RFROM ocean heat content estimates	John Lyman (v)
11:40	Discussion Theme 2 (Part 1)	
12:10	**LUNCH**	
13:40	Posters Theme 2	
Theme 2: Satellite, Model and Deep Ocean Focus		
14:20	TBD	Carl Wunsch (v) (invited)
14:40	Inferring Ocean Heat Uptake from Satellite Gravimetry and Altimetry	Andrew Delman
15:00	Ocean heat uptake estimate from a combination of Altimetry, gravimetry and in-situ data allows to close the energy budget at the ±0.5 Wm^{-2} level (2σ) on yearly time scale	Thomas Duvignacq
15:20	Uncertainty in Ocean heat uptake estimate from the combination of Altimetry, gravimetry and in-situ data	Robin Fraudeau
15:40	**BREAK**	
16:00	OHC Variability from the Latest ECCO State Estimate	Ian Fenty
16:20	Ocean Heat uptake and its relationship to rising SST in the NCEI and SODA4 products	Jim Carton
16:40	Assessing Deep and Abyssal Ocean Heat Content Changes with a Dynamically Consistent Ocean State Estimate	Xinfeng Liang
17:00	Refined Estimates of Global Ocean Deep and Abyssal Decadal Warming Trends	Gregory Johnson (v)
17:20	Discussion Theme 2	
18:00	**ADJOURN**	

Day 3 Agenda, June 3, 2026

Theme 3: Earth radiation at the TOA, surface and in the atmosphere		
08:00	Registration	Wing Sze Lui-Small
08:30	Logistics	Maria Hakuba
08:40	Attribution of the Earth's Energy Imbalance and implications for the future	Gavin Schmidt (v)
09:00	Negligible Contribution from Aerosols to Recent Trends in Earth's Energy Imbalance	Chanyoung Park (v)
09:20	Investigating regional contributions to anomalies of global TOA, surface, and atmospheric irradiance change using satellite observations	Seiji Kato (v)
09:40	Developing Radiative Forcing & Feedback Climate Data Records for Understanding Observed Radiation Trends and Evaluating Models	Ryan Kramer (v)
10:00	**BREAK**	
10:20	Observation-based Estimate of Radiative Feedback and Effective Radiative Forcing	Senne Van Loon
10:40	Observed trends in the Earth's energy imbalance suggest a potentially high equilibrium climate sensitivity	Xianan Jiang
11:00	Large-Scale Shifts in Regional Atmospheric Radiative Absorption Driven by CMIP7 Aerosol Forcing Updates	Chongxing Fan
11:20	Discussion Theme 3 (Part 1)	
12:00	**LUNCH & Transfer to JPL**	
13:00	**JPL TOUR START**	
15:30	**JPL TOUR END**	
TBD	**No-Host Dinner**	

Day 4 Agenda, June 4, 2026

Theme 3: Earth radiation at the TOA, surface and in the atmosphere		
08:00	Registration	Wing Sze Lui-Small
08:30	Logistics	Maria Hakuba
08:40	Recent cloud trends and extremes reaffirm established bounds on cloud feedback and aerosol-cloud interactions	Mark Zelinka (invited)
09:00	How the planet's prevailing cloud systems govern the variability of net TOA radiation and EEI	Lazarous Oreopoulos
09:20	Earth hemispheric albedo symmetries and their implication for EEI	Jianhao Zhang
09:40	Assessing Earth's energy imbalance trend in the early 21st century in two high-resolution coupled models	Yan-Ting Chen
10:00	**BREAK**	
Theme 3: Earth radiation at the TOA, surface and in the atmosphere		
10:20	Assessing the reliability of surface radiation measurements for trends within surface energy budget observations	Laura Riihimaki (invited)
10:40	Confirming a Critical Foundation of Global Warming: Direct Observational Evidence from Space of the Impact of CO2 Growth on Longwave Spectral Radiances	Joao Teixeira
11:00	Future projections of global spectrally resolved outgoing longwave radiation (OLR)	Mareya Saba
11:20	SORACES: Method and instrument design for more accurate estimation of annual changes in spectral outgoing radiation (200-1100 nm)	Christoph Jacobi (v)

11:40	Posters Theme 3	
12:30	**LUNCH**	
Theme 3: Earth radiation at the TOA, surface and in the atmosphere		
14:00	Discussion Theme 3	
Theme 4: Future Ocean, ERB and EEI Observing Systems		
14:40	Framework for an Earth Radiation Budget Satellite Mission: An Imperative to Track and Understand Earth's Energy Imbalance	Norman Loeb (invited)
15:00	Earth's Radiation Budget Observations from Space: Progress on and Risks to Continuity	Peter Pilewskie (invited)
15:20	Prospects for Earth Energy Imbalance Research and Applications within the NASA Earth Science Division	David Considine (v)
15:40	**BREAK**	
16:00	What are the data requirements for addressing science questions as the radiation budget record gets longer?	Mark Richardson
16:20	Exploring the angular dimension of Earth's Radiation Budget with Libera	Jake Gristey
16:40	ECO, an Earth Explorer 12 candidate: unveiling EEI to steer climate action	Thomas August
17:00	Bridging the Gap: Addressing Earth Radiation Budget Continuity via a Novel SmallSat Approach	Alexander Jarnot
17:20	Discussion Theme 4 - Part 1	
17:40	**ADJOURN**	

Day 5 Agenda, June 5, 2026

Theme 4: Future Ocean, ERB and EEI Observing Systems		
08:00	Registration	Wing Sze Lui-Small
08:30	Logistics	Maria Hakuba
08:40	The Earth Climate Observatory space mission concept for the monitoring of the Earth Energy Imbalance and the Earth Radiation Budget	Steven Dewitte (v)
09:00	Sampling the Earth's energy imbalance with the Earth Climate Observatory (ECO) constellation	Thomas Hocking (v)
09:20	On the horizon: the Earth Climate Observatory (ECO)	Björn Linder (v)
09:40	Measuring the Earth's Energy Imbalance from satellite accelerometry	Lluc R. Busquets Soler
10:00	**BREAK**	
Theme 4: Earth radiation at the TOA, surface and in the atmosphere		
10:20	NASA Atmosphere Investigator Meeting Out-brief	Patrick Taylor
10:40	Discussion Theme 4 - Part 2	
11:20	Recommendations by Theme & Wrap-up	Theme Chairs
12:30	**Meeting Adjourn/LUNCH**	
14:00	GDAP Report planning	Chairs (Open to all)
16:00	**ADJOURN**	

Posters

Theme 1: Future Ocean, ERB and EEI Observing Systems		
01	Expectations for EEI trends from reduced-complexity frameworks	Boriana Chtirkova
01v	TBD	Catia Domingues (v)

02	Coupling Between Mesoscale Organization, Propagation Speed, and Dust Loading in Extreme Rainfall-Producing Mesoscale Convective Systems over West Africa.	Dame Gueye
03	Early-Stage Investigation of Optical Effects of Black Carbon Inclusions within Cloud Droplets	Hasna Shosha
04	Application of Data Science and ICT for Climate and Ocean Observation: Critical Infrastructure Required for Communication.	Kalpana Chaudhari
05	GRACE water storage change constrains land energy partitioning and co-evolves with CERES net radiation	Elahe Tajfar
02v	Flux-Driven Surface Temperature Responses to Forest-Cropland Transitions in India Using the ICON Model	Jyoti Sharma (v)
06	Above ground energy and water fluxes reveal groundwater dynamics in tropical peatlands	Rui Cheng
Theme 2: Advances in estimating Ocean Heat Content and Earth's heat inventory		
07	Sensitivity of Global Ocean Heat Content Estimates Under Different Vertical and Horizontal Resolutions	James Reagan
08	A new analytical framework for estimating ocean heat content from satellite altimetry, space gravimetry, and in situ observations	Sebastian Fourest
Theme 3: Earth radiation at the TOA, surface and in the atmosphere		
09	The Pattern Effect Down Under: Southern Ocean cloud regime transitions control evolution of climate sensitivity across climate models	Killian McSweeney
10	Spatiotemporal Variability and Trends of Aerosols by using Long-Term Earth Observation Records	Muhammad Zeeshaan Shahid
11	Spatial structure of land evapotranspiration partitioning as a missing constraint on Earth's radiative variability	Elahe Tajfar
12	Top-of-Atmosphere Longwave Flux Retrievals from AIRS Using CERES and Machine Learning	Chris Wilson
13	New Hyperspectral Infrared Sounder Products and Tools for Characterizing Earth's Radiation Budget	Qing Yue
14	Tropospheric NO_2 Variability from Sentinel-5P as a Constraint on Short-Lived Anthropogenic Radiative Forcing Relevant to Earth's Energy Imbalance	Venkata Sri Varshini Budi
03v	TBD	Miklos Zagoni (v)