ALOS Kyoto & Carbon Initiative
Brief (forest) summary for GlobBiomass

Ake Rosenqvist, K&C Science Coordinator

JAXA
Japan Aerospace
Exploration Agency

Heritage and objectives

The ALOS Kyoto & Carbon Initiative is a JAXA-led international collaboration, forming the continuation of the JERS-1 SAR GRFM/GBFM project. Initiated in 1996, going strong for 20+ years!

Focus on development of (L-band) SAR applications in support information needs posed by the "4 C's":

– The terrestrial Carbon cycle science community (CO_2 & CH_4 sources and sinks);

– Multinational Environmental Conventions:
  - UNFCCC Paris Agreement and UN-REDD+ (Forest and Land Cover Change);
  - Ramsar Convention (wetland characteristics and disturbances);

– Environmental Conservation

– Climate Change (glacier movements)

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Currently 32 science teams from 16 countries.

The K&C Science Advisory Panel has supported JAXA's development of the ALOS PALSAR and ALOS-2 PALSAR-2 missions, and has pioneered the concept of systematic acquisition strategies (JERS-1 regional systematic observation plan, starting 1995, pre-dates even the 1997+ Landsat Long-term Acquisition Plan) and the use of SAR mosaics for regional-scale analysis.

3 Thematic focus areas: Forestry, Wetlands, Glaciers (& previously Deserts)

Forest Theme projects

Christian Thiel & Christiane Schmullius, FSU-Jena, Germany
Vegetation Cover and Biomass Mapping in Various Climates

Maurizio Santoro, Gamma Remote Sensing, Switzerland
Coupling radar-based estimates of forest information with biosphere models for improved carbon flux estimation

Thuy Le Toan, Stéphane Mermoz, Alex Bouvet, CESBIO France
Forest Cover Change and Biomass Mapping

Shaun Quegan & João Carreira, Univerity of Sheffield U.K.
Measuring above-ground biomass and its changes over Brazilian tropical secondary forests and savanna woodlands (Cerrado)

Richard Lucas, Pete Bunting, Ake Rosenqvist, Aberystwyth University, U.K.
Mapping global distribution and changes of mangroves (Global Mangrove Watch)

Johan Fransson, Univ. of Agricultural Sciences, Sweden
Retrieval of forest biomass and biomass change with spaceborne SAR

Forest Theme projects

Renaud Mathieu, CSIR, South Africa
Mapping woody fraction cover and biomass in southern Africa

Josef Kellndorfer, Earth Big Data, USA
Land Cover Change and Forest Carbon Tracking with L-Band SAR and Optical Time Series

Dirk Hoekman, Wageningen University, Netherlands
Wide area forest monitoring and biomass stratification in Insular SE Asia and Guiana Shield

John Armston, University of Queensland, Australia
Detection of Biomass and Structural Change

Paul Siqueira, Univ. Massachusetts, USA
Use of short-period ALOS-2 observations for vegetation characterization & classification

Francesco Holecz, sarmap, Switzerland
"TransparentForests"

Forest Theme projects

Kostas Papathanassiou, DLR, Germany
ALOS-2 PALSAR-2 & TanDEM-X for Forest Disturbance & Degradation Mapping

Humberto de Mesquita, Brazilian Forest Service, Brazil
Forest Structure to Map of Forest Types in Brazil

Trix Estomata, Don De Alban, Anji Monzon, GIZ, Philippines
Utilising L-Band SAR Data for Natural Resource Management in the Philippines

Wolf Forstreuter & Johannes Reiche, Secretariat of the Pacific Community, Fiji
Improving Forest and Carbon Monitoring in the Pacific Island Region

Joaquim Macuacua, National Directorate of Lands and Forestry, Mozambique
National Forest Monitoring System For REDD+ in Mozambique

Anthony Milne, Horizon Geoscience, Australia
Using multi-temporal and multi-channel ALOS PALSAR-2 to investigate forest and land cover changes in Papua New Guinea

Forest Theme projects

Yumiko Uryu, WWF, Indonesia
Identifying industrial go and no-go zones and monitor industrial practices through PALSAR-based land cover and carbon stock mapping in Sumatra and Borneo

Anthea Mitchell, University of New South Wales, Australia
Forest cover and land use mapping in Tasmania

Hamdan Omar, Forest Research Institute Malaysia (FRIM), Malaysia
Updating Forest Cover and Assessing Aboveground Biomass in Various Tropical Forest Ecosystems in Malaysia

Orbita Roswintiarti, LAPAN, Indonesia
Forest Mapping in North Sumatra, Indonesia

Bill Salas & Nathan Torbick, Applied Geosolutions, USA
Operational rice mapping and forest structure assessment to support the 3Cs

Edson Sano, IBAMA, Brazil
Detecting new deforested areas in the Brazilian Amazon

K&C Reports and publications

K&C Science Team Reports Phase 1 (Jan 2010, 230 pp)

K&C Science Team Reports Phase 2 (Oct 2011, 250 pp)

K&C Science Team Reports Phase 3 (Nov 2014, 450 pp)

K&C Booklet
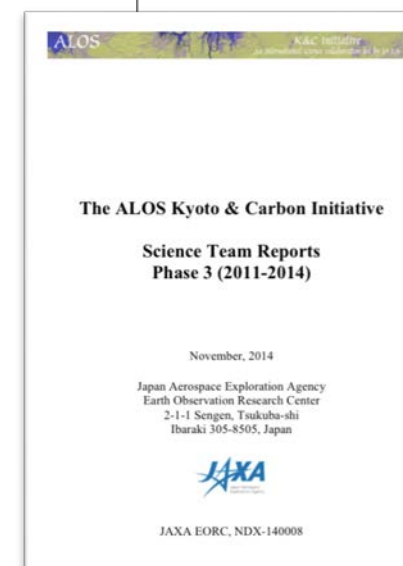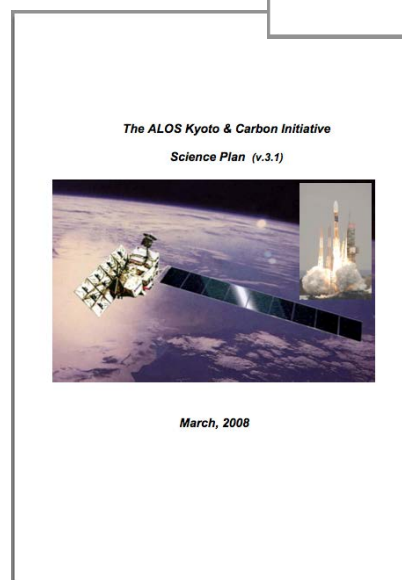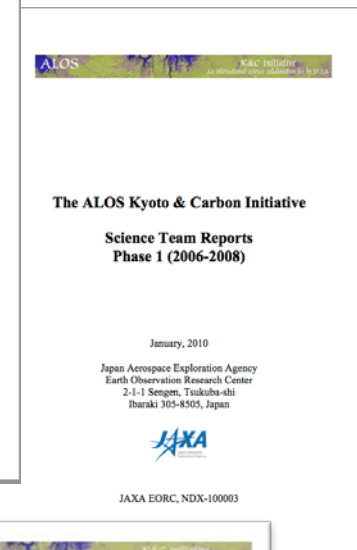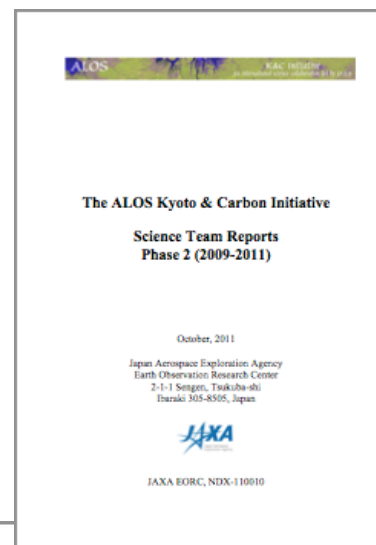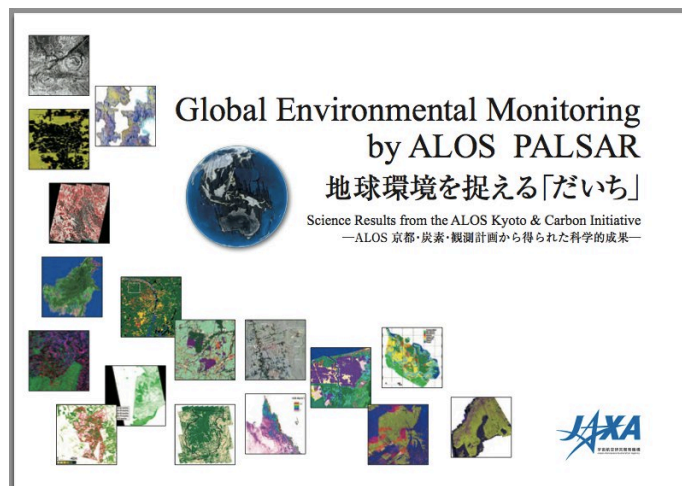
Download at http://www.eorc.jaxa.jp/ALOS/en/top/kyoto_top.htm

JAXA EORC
K&C Homepage

• Agendas and presentation material available from all previous K&C Science Team meetings (KC#1 – KC#23)

• PALSAR and PALSAR-2 systematic observation strategy (BOS)

• JAXA 25m mosaics

http://www.eorc.jaxa.jp/ALOS/en/top/kyoto_top.htm
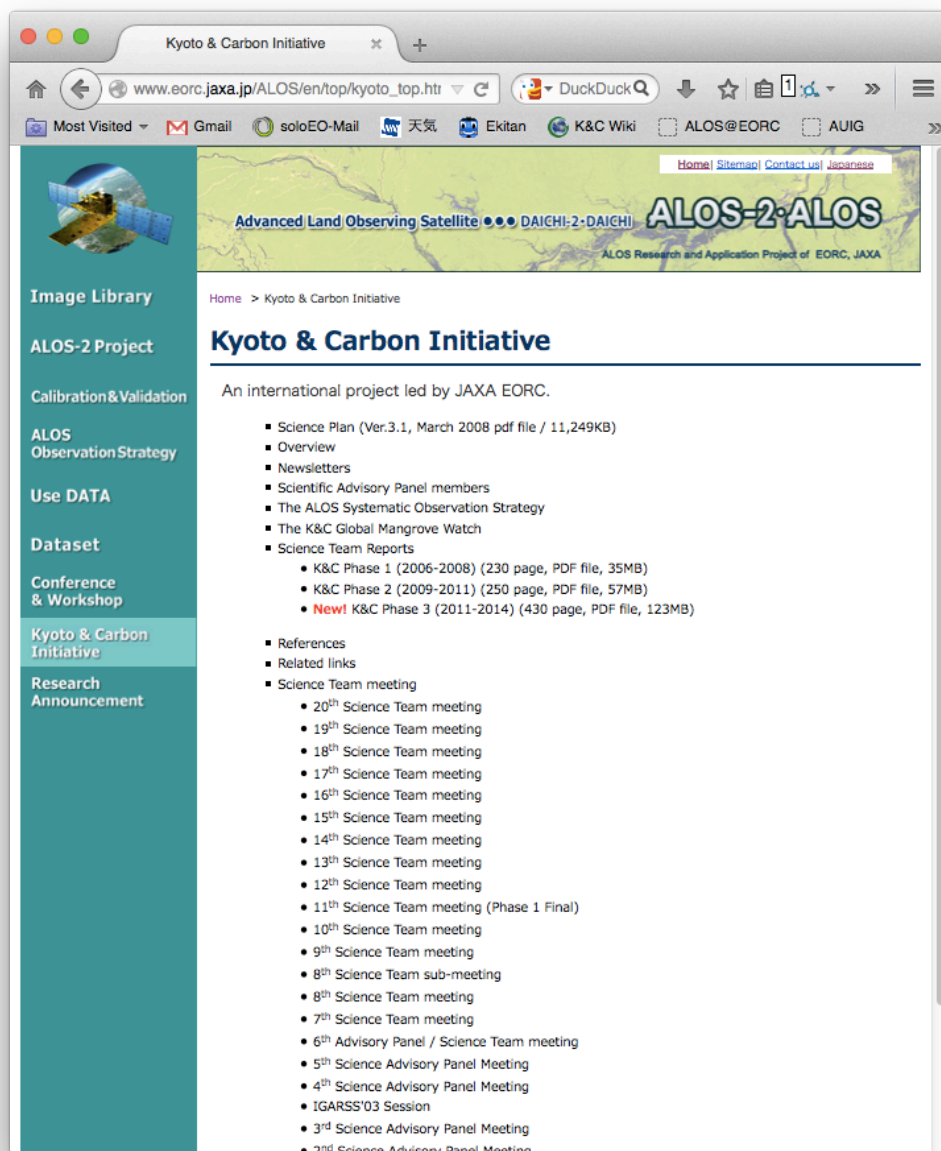
JAXA EORC
Mosaic Homepage

Global 25 m resolution
mosaics online

• PALSAR 2007 – 2010
• PALSAR-2 2015 – 2016
• FBD image data
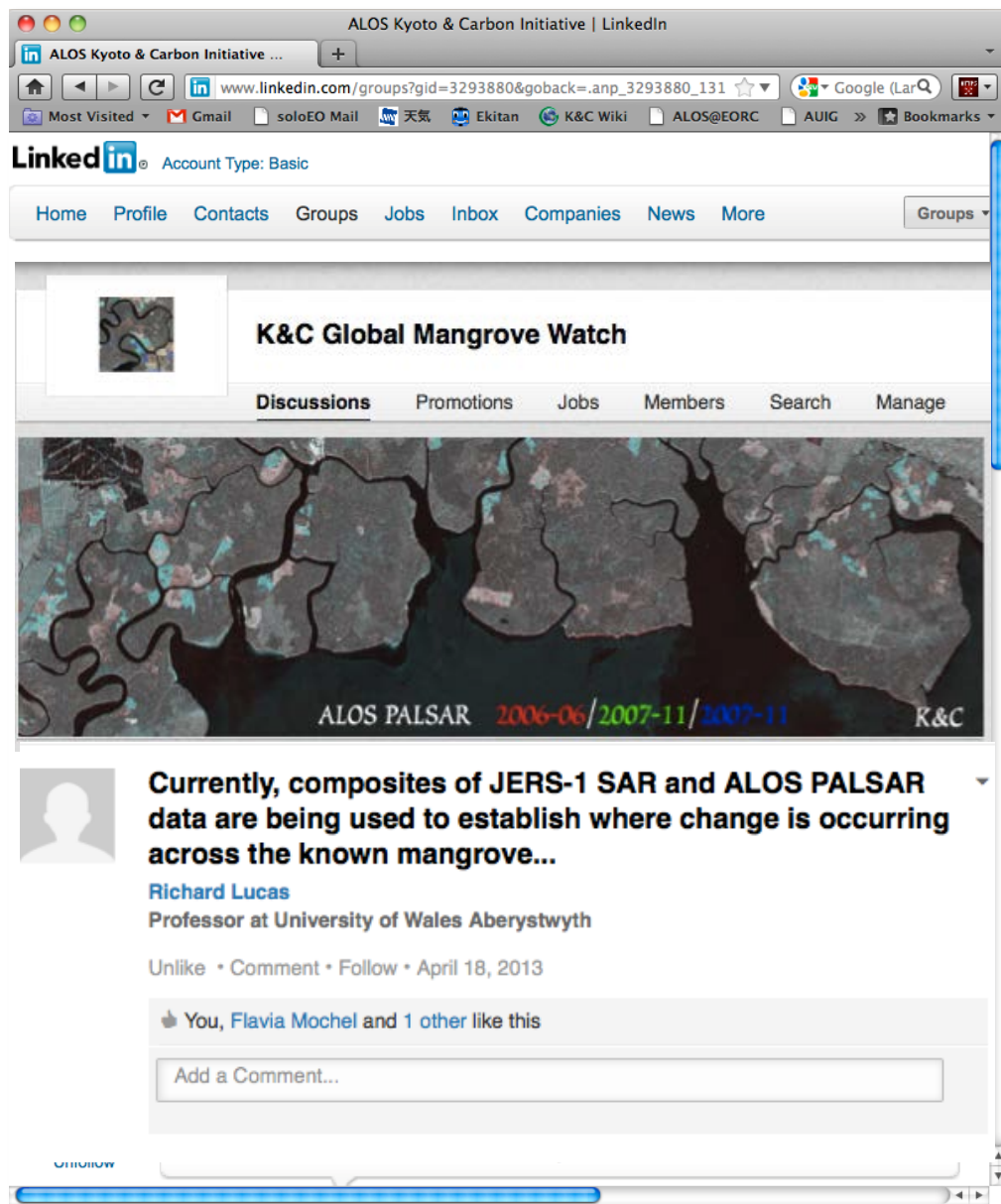
http://www.eorc.jaxa.jp/ALOS/en/palsar_fnf/fnf_index.htm

Interest group on the LinkedIn network with news on publications and other events.

Aim to disseminate K&C info to broader community.
~250 members

Group name:
ALOS Kyoto & Carbon Initiative

Request membership directly at group page at
http://www.linkedin.com
OR send email to
ake.rosenqvist@soloEO.com

Group name:
K&C Global Mangrove Watch

Primarily for GMW project related information, but increasing interest from the public.

Request membership directly at group page at
http://www.linkedin.com
OR send email to
ake.rosenqvist@soloEO.com

K&C reference Library
on the K&C Wiki

Library of references to papers relating to K&C and GFRM/GBFM research

130+ references & PDFs from Science Team 1996–2017

https://kcwiki.wordpress.com/

Summary

- Long-running SAR science programme uninterrupted over 20 years (first GFRM meeting 1996, now 30+ meetings)

- Supporting International **C**onventions, Environmental **C**onservation and **C**arbon Cycle and **C**limate Change (4 Cs)

- Engaging an international team of world-leading SAR scientists

- Pioneering systematic acquisition planning (JERS - regional, ALOS/ALOS-2 global) - currently accepted as standard for most new SAR missions

- Introducing SAR mosaics as a tool for regional-scale data analysis and spreading utilisation of SAR data beyond the SAR-geek community (=us!)

- GRFM/GBFM/K&C programmes have resulted in 130+ publications. Available for download at K&C Wiki

- Presentation material from all K&C meetings available at K&C www

- K&C Science Team reports and booklet also available at K&C www