K&C Global Mangrove Watch
Work Session

ALOS K&C Science Team meeting #17
K&C Global Mangrove Watch

Special Work Session

Objectives:
• Establishment of "K&C Mangrove Watch team"
• Discussions on technical/practical issues
• Development of a draft work plan / actions
K&C members (@KC#16) wishing to contribute to GMW

- Ake Rosenqvist - coordination
- Richard Lucas – technical lead
- Khali Hamzah – Peninsular Malaysia
- Dirk Hoekman – Borneo, Papua
- Enrico Paringit – Philippines
- Humberto de Mesquita – Brazilian coast
- Kyle McDonald – global coastal inundation
- Marc Simard & Lola Fatyinbo – Americas and Africa
- Lisa Rebelo – East Africa coast
- JAXA EORC team – Sumatra & other potential areas
- Bill Salas – Mekong delta
- Peter Scarth – Australia
- (other members?)
Some initial discussion notes

- **K&C GMW** very relevant support to Ramsar Convention (Ramsar-JAXA MoU)
- Simard and Fatyinbo have generated mangrove (stand) height maps (Africa and Americas?) derived from SRTM DEM. Height accuracy approx 2 m.
- Simard: Rule of thumb – relationship between height vs biomass approx a factor 10 (i.e. 10 m height ≈ 100 t/ha)
- Lisa: Important to note that all reductions in mangrove areas (within a given mask) do not necessarily indicate “loss” of mangrove, as natural migration of mangroves from one place to another are a common cause for change.
- Mangrove extent using only PALSAR not straightforward. Mapping of new mangrove areas outside the USGS-2000 mask a challenge. Changes (migration) however expected to occur in the vicinity of existing mangroves and analysis in a buffer zone around the USGS mask should be considered.
- Enrico: Should Nipah palms be included in the mangrove class? (common in the Philippines) Needs to be verified.
Foreseen GMW products

Quick demonstration product (demo at Ramsar COP 06/2012?)

- Annual mangrove change maps (2007/08, 08/09, 09/10) within the USGS-2000 mangrove mask

2012-2014 time frame

- Mangrove extent derived from PALSAR (update +/- of USGS-2000 mask) – base year 2007
- Change map USGS-2000 vs PALSAR-2007

- Change maps 2007/08, 08/09, 09/10

- Structural classification?
Annual change maps (2007-2010) within the USGS-2000 mangrove mask

- It should be noted that new mangrove areas outside of the USGS-2000 mask are not included in this “quick” product – important to clearly state in the product description.
- Mangrove expansion however only represent a small fraction of total mangrove change – and it is the decrease of mangrove that is the critical issue.
- Aim to finish during first half of 2012. First version by next K&C Science Team meeting (KC#17, March 2012)
- Suitable demonstration product for Ramsar COP meeting (Romania, June 2012). Lisa will investigate possibility of joint side-event with ESA GlobWetland.
Mangrove extent 2007

- Mangrove extent PALSAR vs USGS-2000 (including modification of USGS-2000 boundary)
- Suggested PALSAR base year: 2007 (initially)
- Need to consider a buffer zone around the USGS mask where possible expansion is expected to have occurred

Change map USGS-2000 vs PALSAR-2007

- PALSAR data layers: backscatter intensity (16-bits gamma-0), local incidence angle, acquisition date (days since ALOS launch), mask info (normal, ocean, shadow, layover, etc.)
- classification code based on FAO LCCS
Mangrove extent 2008, 2009, 2010
Change maps 2007/08, 08/09, 09/10

• Same as previous products, but for the rest of the remaining PALSAR years
Mangrove structure and biomass

- Higher level products – generation still TBD

Notes:
- Proproots vs. non prop root mangroves (note different backscatter for mangroves with and without prop root systems (prop root mangroves show decrease in backscatter for stands with biomass above approx 100-120 t/ha (TBC))
- Use stand height as a continuous variable (available from SRTM)
- Important parameters: habitat type, species
Work flow and action items for development of initial demo mangrove change product

- GMW members to provide lat/long coordinates for 1-2 deg tiles over selected mangrove reference areas (1–10 sites/member) – email to Ake and Richard by 5 April, 2012.
- Based on input from GMW members, Ake to put together data request file and submit to JAXA for generation of 2007-2010 PALSAR mosaic tiles sequence. JAXA provides data to GMW members (after agreements have been signed)
- Richard to set up GMW page on the K&C Wiki (ID & paswd: ALOS-KC) (DONE)
- Richard develops initial eCog rule-set for mangrove change classification, based on the member test site tiles
- Team evaluates classification results (iterative with Richard)
- v.1 rule set to be provided to JAXA to be applied when JAXA generates the next version of the global FNF map.