



Poster ID: 313 Monitoring land cover dynamics and plant succession using ALOS imagery in the context of flood affected areas in Sunsari district, Nepal

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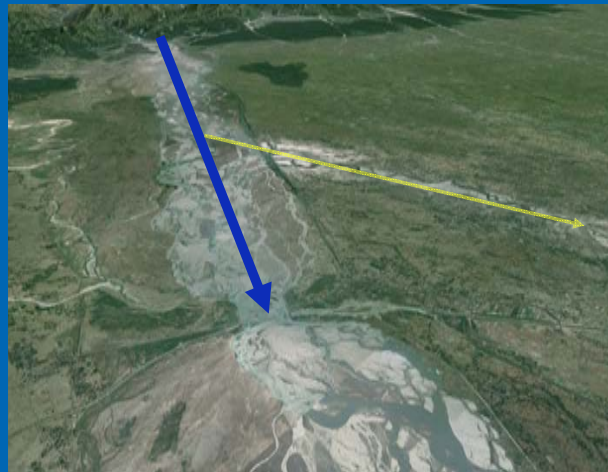
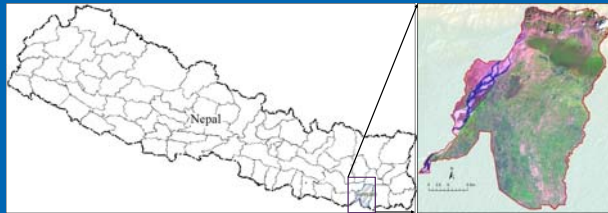
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Abstract

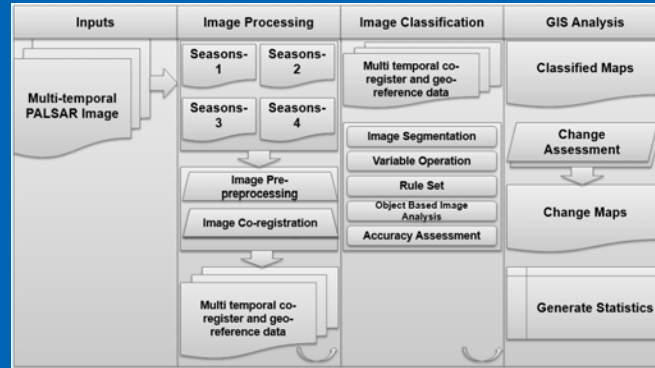
Sunsari district in Nepal has been inundated many times in recent decades, with the most extensive inundation taking place after the breach of the Koshi embankment at Kusaha on 18 August 2008. Historically, land has been simply washed away by the unregulated stream flow and strong currents, and after floods people are often unable to identify their land. Thus it is not possible to determine the vegetation status of land that has been washed away. For damage assessment, disaster preparedness, and land use planning, it is important to know what type of vegetation was established prior to flooding, how much was destroyed especially by the 2008 flood, and how the plant succession has developed in the flood damaged areas. In the present study, land cover dynamics and plant succession information for 2007, 2008, 2014, and 2015 were investigated using maps derived from Advanced Land Observing Satellite Phased Array type L-band Synthetic Aperture Radar (ALOS PALSAR) images supported by Advanced Visible and Near Infrared Radiometer type (AVNIR) images. Open access NEST (Next ESA SAR Toolbox) tools were used for reading, post-processing (import/export, calibration, filtering, resampling, co-registration, and orthorectification), and visualizing the ALOS PALSAR images. Object based image analysis in eCognition was used to determine land cover classes such as, forest, shrubland, grassland, crop land, water bodies, and settlements. The ALOS-PALSAR data training areas were chosen using the AVNIR imagery. Ground reference data were collected from sites throughout the study area for validation.

Study Area

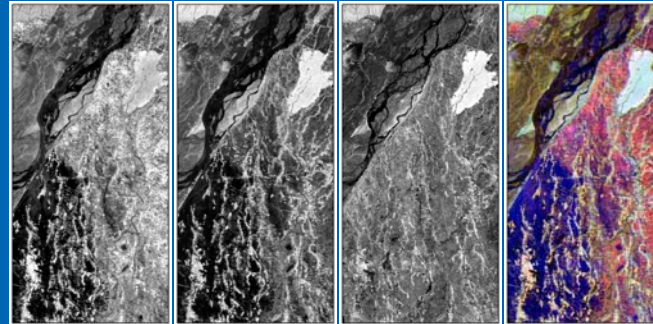
The study area is located in South East part of the Nepal and name Sunsari District. This a very important district of Terai region and lower part of Koshi river basin.



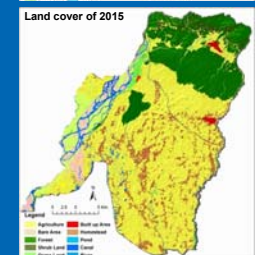
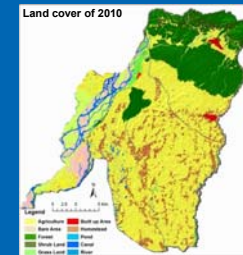
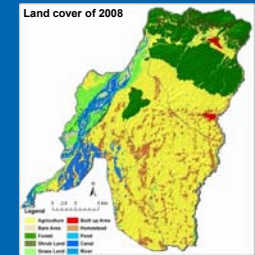
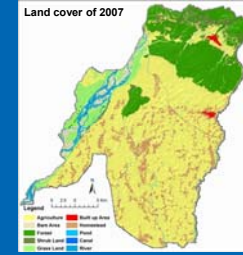
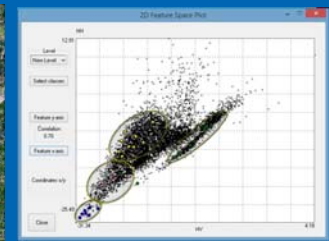
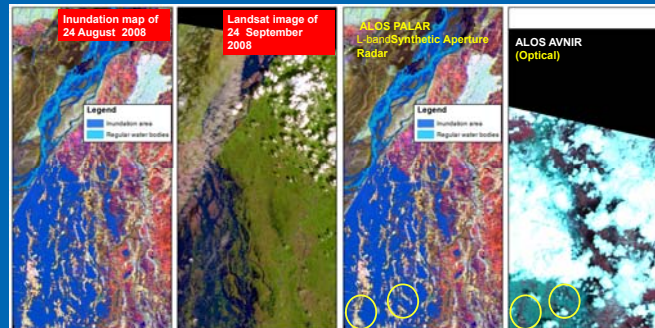
Methodology



Koshi flood mapping using ALOS PALSAR images
Backscatter analysis Blue: Inundation area Black: Regular water area Red: Agriculture area White: Forest area



Koshi flood mapping using ALOS PALSAR images Flood map Validation with ALOS AVNIR data



Land cover (Acre)	Year			
	2007	2008	2010	2015
Forest	53240	53229	53222	53218
Shrub Land	9506	9506	9508	9509
Grass Land	20092	18631	18822	18024
Agriculture	167065	154251	154401	158365
Barren Area	8787	7259	8245	7103
Built Up Area	1068	1069	1070	1072
Homestead	26963	25635	25655	25818
Waterbodies	6654	25125	23783	21596

This study conducted part of the ALOS research 2 of JAXA



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