**Study the Impacts of Land Degradation Processes on Food Security in Coastal Areas of Bangladesh by Using Geospatial Intelligence (Case Study: Impacts of Mega Storm Surge Aila)**

Dr. Md. Sajidur Rahman1, Dr. Hafizur Rahman2, Nandan Mukherjee3, Professor Ainun Nishat4 and Roufa Khanum5

1Dr. Md. Sajidur Rahman, Assistant Professor, Centre for Climate Change and Environmental Research (C3ER), BRAC University, 66 Mohakhali, Dhaka – 1212, Bangladesh. Tel: +88 04478444084, Mobile: +88 01921 487934, Fax: 880-2-881 0383 Email: sajid@bracu.ac.bd, sajid\_ru@yahoo.com

2Dr. Hafizur Rahman, Principal Scientific Officer (PSO), Bangladesh Space Research and Remote Sensing Organization (SPARRSO), Remote Sensing Bhaban, Agargaon, Dhaka 1216. Mobile: +88 880 1737791650, Email: hafiz1961@yahoo.com

3Nandan Mukherjee, Assistant Professor, Centre for Climate Change and Environmental Research (C3ER), BRAC University, 66 Mohakhali, Dhaka – 1212, Bangladesh. Tel: 880-2-882 4051-4 Ext. 4086, Mobile: +88 01833 137497, 01817 066286 Email: nandan@bracu.ac.bd, nandan99@gmail.com

4Professor Ainun Nishat, Vice Chancellor, BRAC University, 66 Mohakhali, Dhaka – 1212, Bangladesh. Phone: +88 02 8824051; Mobile: +88 01819 228245, Email: nishat@bracu.ac.bd; ainunnishat@yahoo.com

5Roufa Khanum, Lecturer III, Centre for Climate Change and Environmental Research (C3ER), BRAC University, 66 Mohakhali, Dhaka – 1212, Bangladesh. Tel: 880-2-882 4051-4 Ext. 4073, Mobile: +88 01832063471, Email: roufa@bracu.ac.bd; roufa.rumee@gmail.com

**Contact author:** Dr. Md. Sajidur Rahman, Assistant Professor, Centre for Climate Change and Environmental Research (C3ER), BRAC University, 66 Mohakhali, Dhaka – 1212, Bangladesh. Tel: +88 04478444084, Mobile: +88 01921 487934, Fax: 880-2-881 0383 Email: sajid@bracu.ac.bd, sajid\_ru@yahoo.com

**Abstract**

Bangladesh ranks top most position among the vulnerable countries in the world due to climate induced natural hazards. Being a vulnerable country Bangladesh tried to improve its overall conditions and achieved remarkable infrastructural developments and increased awareness, particularly in coastal areas, by the combined effort of Government, non government and other social initiatives. Exception prevails with reference to the extremity and uncertainty due to climate change. In May 25, 2009 devastating Aila hit the coastal areas of Bangladesh and bleached embankments, roads and settlements, developed new channels, and increased widths and depths of old channels. As an aftermath huge area has been exposed for a long time to the regular tidal flashing processes by sea water with high salinity. Multiple threats like salinity ingression, contamination of social water (drinking and agriculture use), flood and erosion have been intensified and integrated by Aila.

The potentiality of Geo-intelligence provided a strong support in coupling a wide range of data and geospatial analysis. To study the pre and post Aila situations time series satellite images of different resolutions have been analyzed, and Focus Group Discussions (FGD) have been conducted to perceive the community perceptions that they have experienced between two time periods. The traces of land use and land cover change have been found by analyzing the time series satellite images.

Bangladesh is a shrimp exporting country and southwestern coastal region is the major shrimp growing zone. Economic activities of this region are aquaculture (Gher) dependent. From the analysis of satellite images it is found that massive erosion has occurred in Gher and its surrounding areas. All sorts of socioeconomic activities are more sensitive to the climatic events. Major portions of the community are now dependent on the forest based resources while before Aila most of them were dependent on aquaculture and agriculture.