Proposal for Forming an IAA Study Group SG 1.14

Title of Study:
Integrated Precursor Distinguish in Multi-Geophysical Fields around Global Earthquake Events with Magnitude larger than 7 in Recent 10 Years

Proposer(s):
Bao Weimin

Primary IAA Commission Preference:COMMISSION 1 Space Physical Science
Secondary IAA Commission Interests:COMMISSION 4 Space Systems Operations & Utilization

Members of Study Team
Chair(s): BaoWeimin(China), Co-chair(s): Jean-Michel Contant (France), Vladimir Kuznetsov(Russia),
Secretary:
Other Members:
China: ShenXuhui, Zhang Xuemin, Cao Jinbing, Zhao Zhengyu, Du Jianguo, He Liming
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S. Korea:
India:

Short Description of Scope of Study
Earthquake anomaly distinguishingand determination is one of the most difficultiesin the area of natural sciences in theworld. Space observation have been showing strong capability to monitoring global seismicity and acquires ten`s times of case study than ground-based observation. This proposal will mainly focus on the case study of global strong earthquake during last 10years to draw out the statistical characteristics of space-based precursors, including Ionospheric disturbances, Geomagnetic and geo-electrical fields, gravity field, infra remote sensing as well as crustal deformation by GNSS and InSAR, making connections among them in temporal and spatial distribution to ensure the reliability of anomaly and improve the distinguishing probability related to earthquakes, and try to make aproposal on global virtual system on earthquake monitoring from spaceby integrate different satellite resourceswith multi geophysical and geochemical parameters.
Overall Goal:
Developing and exploring the new way for earthquake monitoring and prediction, as well as the reliability analysis on anomalies in multi geophysical and geochemical

parameters around same earthquakes. Advancing the establishment of the global virtual satellite constellation on earthquake monitoring, including electromagnetic, meteorological, infrared RS and hyper spectral satellites etc.

Intermediate Goals:

1. Identification the characteristics of seismic precursors including ionospheric perturbations, infra Remote Sensing, InSAR & GNSS and hyper spectral anomalies based on the satellite observations.
2. Build the time linewith different anomalies around all the earthquakes and suggest an international workflow based on satellite constellation.
3. Develop the coupling model to connect multigeophysical and geochemical precursors before typical events.

Methodology:

Setup an international study group, draft a detailed schedule of the study.
Agreement on a study report outline.
Assigning individual responsibility for the study report.
Assigning editor to coordinate individual parts and compile a coherent study report.
Work to be conducted through on-line collaboration and study group meetings held in the course of annual International Astronautical Congresses and the IAA Spring meetings.

Time Line:

Draft outline of report: September of 2015
Review outline of report and make assignments: autumn of 2016
First draft of report: middle of 2017
Final report: end of 2017

Final Product(Report,Publication,etc.):

Publishable reportto be distributed to the Space international community
At least 3 papers published in international Journals.

Target Community:

International space community, geophysical community and earthquake science community, related universities

Support Needed:

Communication of workshop opportunities

Potential Sponsors:

CNSA?CASC?CEA?

To be returned to the IAA Secretary General Paris by fax: 33 1 47 23 82 16 or
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