

IAA Study Group Status Report

Responsible Commission:

COMMISSION 4

Study Number and Title:

SG 4.20

International Cooperation on Remote Sensing in Earthquake Emergency Response

Short Study Description (repeat from Study Group Proposal):

In recent years, earthquake emergency response experiences, such as Wenchuan and Haiti earthquakes, indicate that it is necessary to bring together different satellite resources, including remote sensing satellite, communication satellite and navigation satellite, to support the earthquake emergency rescue. It also highlights the importance of international cooperation on satellite resources, which can help us to assign the distribution of earthquake emergency rescue resource, and to reduce the loss of life and property of the affected areas. An effective coordination policy will be established, which enables better coordinated remote sensing, communication and navigation satellite systems among different countries, so that technical capabilities will be better utilized and experts all over the world can be efficiently gathered after a devastating earthquake. The advantages will complement each other and provide emergency support for future strong earthquakes.

Overall Goal:

To coordinate the international remote sensing to make full use of international advanced technologies and experience, to provide a platform for international experts to contribute their wisdom in earthquakes, to form a collaborative satellite rapid response mechanism for earthquake emergency response.

Progress in past six months:**Compilation and protocol formulation of remote sensing earthquake emergency application**

The monograph summarizes and summarizes the technical methods, workflow, expert knowledge, thematic product mode, data sharing mode, cooperation platform construction of multi-source and multi-mode remote sensing images for earthquake emergency application. The method model and the cooperation mode of emergency work are introduced in detail. Based on this, the cooperation agreements and modes of multi unit and team are summarized when a major earthquake occurred, and the cooperation principle, cooperation content and cooperation model are elaborated in detail.

地震应急国际合作组织协议⁴³

地震应急合作组织是由 XXX 发起成立的应用于地震应急快速组织、数据与技术共享的公益组织，主要作用是在合作成员所在国家或地区发生地震以后，由合作组织中心第一时间协调本合作组织的应急机制，判定地震震级、震中等，协调合作成员共享第一手数据，对收集的数据进行快速处理，然后将数据处理成果发送给各合作成员，及时制定可行的合作应急预案，在震后第一时间提供应急救援技术与数据支持。⁴⁴

框架的宗旨是通过加强利用空间设施以进行重大地震灾害应急管理，利用每一个专家和机构的资源和能力减缓地震灾害对人类生命和财产的影响。⁴⁵

空间对地观测技术在减轻自然灾害上面发挥着非常重要的作用。与其他手段相比，空间对地观测技术具有反应速度快、覆盖范围广、不受地面条件限制等特点，在应对重大地震灾害中具有独特的优势。在地震应急响应能力方面，通过卫星遥感技术和导航定位技术，通过气象、光学和雷达等卫星，可以进行全天候、全天时的大范围观测，获取灾害的形成、发展路径以及动态变化等信息，可以迅速获得灾害范围、位置和受损程度等灾情，为救灾人力和物资的投放提供指挥决策支持。在对灾害管理的持续性、动态性和广域性需求方面，及时提供灾情监测和灾害影响数据，为准确评估灾害损失提供科学依据。⁴⁶

一、关于本合作组织的相关介绍⁴⁷

（1）合作组织成立的背景：当前地震等重大自然灾害对人类的生命财产安全威胁巨大，在地震发生时，一般都是由灾害发生地或当时国家自己进行分析、灾害评估和应急救援，部分时候会有少量国际公益组织或国家提供人道主义援助，没有形成一个可以联合各方各国力量、聚集各方数据、凝聚各方智慧和设施、各方统一组织统一协调的救援系统。⁴⁸

（2）合作组织成立的目的：促进各国地震数据资源丰富、救援机制成熟的相关组织或机构之间在利用数据、设施和方法进行地震灾害危机管理方面的合作，在成员组织所在国家发生地震期间向遭受自然或技术灾害影响的国家或群体提供数据、信息及救援指导服务，支持受灾国家的灾害应急救援和管理决策，减轻地震对人类造成的损失。⁴⁹

（2）International Conference

Zhang Jingfa, the member of the research group, participated in the International Conference of the mid-term report of "dragon IV" and showed the team's latest research achievements.



Zhang Jingfa ,Li Yongsheng took part in the " Geophysical Annual Meeting" and make an oral report with the title of " New Progress and Consideration of Interferometric Radar Technology Seismic Applications "



Zhang Qingyun took part in the "Satellite Seismic Observation Technology and Application Seminar " and make an oral report with the title of "Application of InSAR time series analysis method to surface micro deformation monitoring"



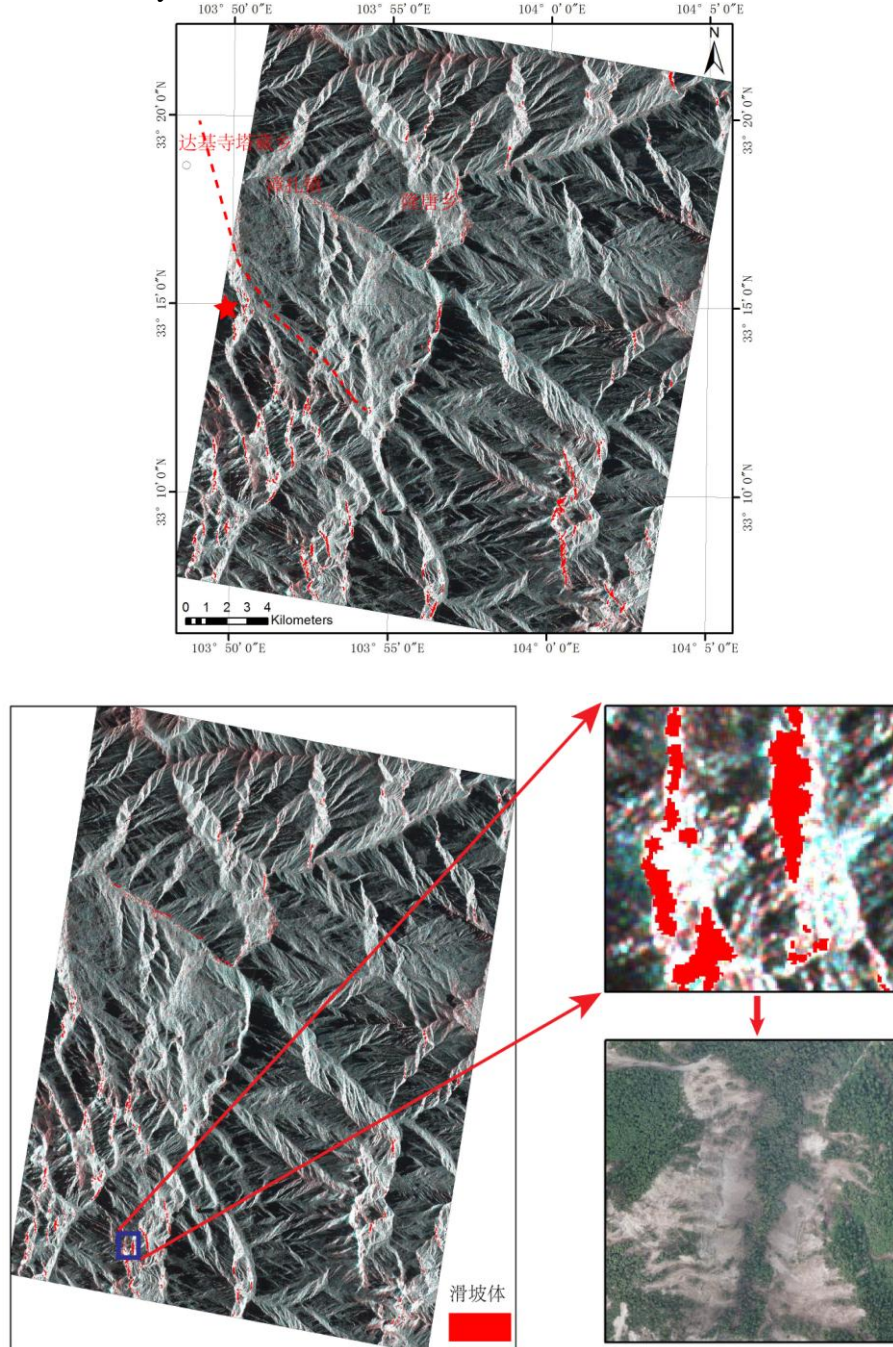
Liqiang took part in the "Annual meeting of Remote Sensing Application Technology" and made an oral report with the title of "New progress in remote sensing seismic application of change detection technology".



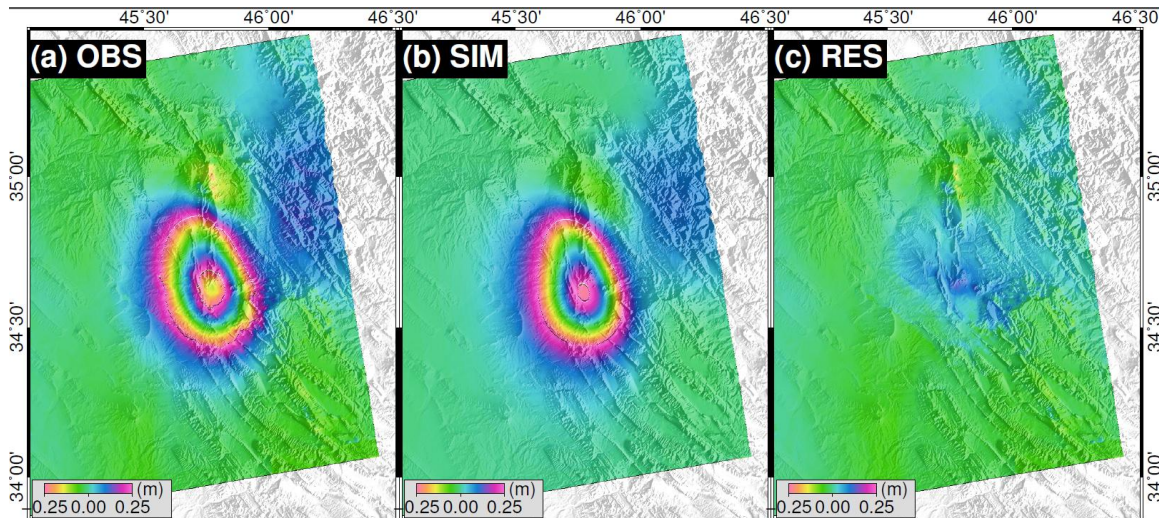
(3) Earthquake emergency

After the 8 August 2017 Jiuzhaigou earthquake, the remote sensing earthquake emergency work was carried out by using SAR and optical remote sensing image data obtained at home and abroad. We extract the secondary disaster distribution information from the

earthquake area by using the domestic Gaofen-3 SAR satellite. The characteristics of polarization are mainly used.



After 12 November 2017 Iraq earthquake, the remote sensing earthquake emergency work was carried out by using SAR remote sensing image data obtained at China and abroad. We had produced seismic coseismic deformation field product.



Website Study Information update: (please give any update regarding Study Group Membership, documents, Study Plan and Schedule):

Study Group Membership.

Issues requiring resolution? (recommend approach):
None

Product Deliveries on Schedule? (If modified explain rationale):
Yes.

Study Team Member Changes? (List any Study Team Members that you wish to discontinue, and provide names plus contact coordinates of any Members you wish to add on the second page of this Study Update form.) Note: Complete contact information including email, tel. and fax must be provided for all additions. Only Members with complete contact information will be listed and receive formal appointment letters from the IAA Secretariat.)

None.

Name of person providing Study Group Status (Study Group Chair or Co-Chair):

Professor Jingfa ZHANG, Study Group Secretary

Status Report Date:

Feb, 2018