## Disasters Task DI-06-13

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Implementation of a Global Early Warning System for Wildland Fire</th>
</tr>
</thead>
<tbody>
<tr>
<td>DI-06-13</td>
<td>Initiate a globally coordinated early warning system for wildland fire to mitigate the many negative social, economic and environmental impacts of uncontrolled wildland fire. The system will i) provide advance knowledge of impending extreme fire conditions, allowing communities and fire agencies time to initiate fire prevention, detection, and suppression preparedness activities, and ii) provide a universal system that will form the foundation to implement international resource sharing agreements during times of wildland fire disaster.</td>
</tr>
</tbody>
</table>

The system will operate as a coordinated network of regional systems using existing remotely-sensed and ground-based data networks, and new forecasting and fire danger risk models to provide improved prediction capabilities, analysis tools, and response support. The system will operate at global to local levels, with rapid information dissemination via dedicated networks. Technology transfer and capacity building programs in system operation and use will be conducted at global, regional, and local levels. Interface coordination will be put in place to ensure that activities of other Social Benefit Areas will benefit from data and products generated within this Task. Activities will be coordinated with the UN-ISDR “Global Wildland Fire Network” coordinated by the Global Fire Monitoring Center (GFMC).

### Description of the Work to be Performed

The activities of this Task will be performed in the following areas: (i) background and review of existing fire danger rating and early warning systems, and stakeholder operational programs; (ii) assess ways to enhance current fire early warning systems; (iii) define options and mechanisms for the implementation of an operational global early warning system, (iv) develop an Implementation Plan for a Global Early Warning System for Wildland Fire, (v) ensure the the Global Early Warning System for Wildland Fire will become a coordinated component fo a Global Multi-Hazard Eaarly Warning System as laid down in the Hyogo Framework for Action 2005–2015, and (vi) coordinate implementation tasks with user agencies through capacity building and outreach programs (e.g., education seminars, operational training workshops).

The activities will be coordinated by the Global Fire Monitoring Center (GMFC) on behalf of an international consortium of wildland fire, weather, and remote sensing agencies (listed in the Task Participant list) in conjunction with the UN-ISDR initiative “Global Wildland Fire Network” and will consider as planning reference the project “Global Early Warning System for Wildland Fire”, presented by the consortium at EWC III in Bonn, March 2006.

The work will include:

1. Continue and complete the review of existing warning systems for fire including technical/operational capabilities and status (demonstration project, pre-operational…), product adequacy…etc, identify gaps and weaknesses, periodically update the GMFC web-based fire early warning portal, by including relevant links. Explicit request for information on this matter will be sent to all GEO members.

2. Define, with the involvement of the user communities, the scientific community, the producers of the products, here included space agencies, the basic features of an operational global early warning system and associated possible options and mechanisms for its progressive implementation. The expected result is an improvement and an update of the above mentioned project “Global Early Warning System for Wildland Fire”.

3. Perform a review of the information products, of evident crosscutting nature or generated for specific use in other societal benefit areas, that, if realized with a suitable frequency, may serve as a key intermediate step to ensure the operation of the early warning system.
Disasters Task DI-06-13

4. Progressively enlarge the partnership for the execution of the task, clearly identify new partners involvement and contributions

5. Advocate and actively foster financial support for the implementation;

6. Start the implementation of the global system, involving relevant final users and starting from regions where the identified gaps are highest.

In parallel to the above described activities, that constitute the core of this task, two other activities will also be conducted:

- Continuous assessment of ways to enhance current fire early warning systems (new products and associated modelling requirements, improved product accuracy and delivery time, development of standards, protocols …etc) taking into account capabilities of new/forthcoming generation of Earth observation satellites (both geostationary and polar orbits) and advanced product dissemination systems

- Link with specialized organizations (UN and others) and forestry associations to identify options and interfaces in order to take benefit from data and products generated within this Task.

Progress on task execution will be presented at workshops and conferences in order to gather broader consensus by an enlarged community.

Output & Deliverables

A. Definition document (technical, operational) for a global early warning system for wildland fire

B. Periodical update of the GMFC website and its linkage with GEO Web/clearinghouse

C. Regional and global prototypes of the System pre-operational, including its link to GEO Web/clearinghouse

D. Continue progressive implementation and operations

Calendar (incl. milestones)

A. 2008-2009

- Develop the “Implementation Plan for a Global Early Warning System for Wildland Fire”, including a summary of three potential prototype regional systems in areas of high fire risk and/or threat to social, economic, and environmental values (Africa, South America, and Southeast Asia)

- Initiate an outreach program to disseminate information on, and gain support for, the Implementation Plan by the wildland fire user community through presentations at international fora including:
  i. UN Wildland Fire Advisory Group/Global Wildland Fire Network, 4-6 July 2008, Freiburg, Germany
  ii. GOFC-GOLD Int’l Workshop on Advances in Operational Weather Systems for Fire Danger Rating, Edmonton, Canada, 14-16 July 2008

- Secure funding to support full development of at least one prototype regional system (3-year period minimum)

B. 2009-2010

- Assess and acquire regional infrastructure (hardware, software, communication networks) and human resource needs

- Detailed design of regional prototype model, including integration of data collection networks, data processing (active fire monitoring, fire danger modeling, and fire weather forecasting), and early warning information dissemination
Disasters Task DI-06-13

- First-year trial run of system operation by Wildland Fire EWS consortium
- Conduct information sessions and training workshops on system operation with regional remote sensing, weather, and wildland fire networks

C. 2010-2011
- Conduct capacity building workshops on system use at regional to local levels; this includes calibration of early warning system to local and regional fire regimes, and design of fire prevention, detection, and suppression preparedness programs in response to early warning system information
- Initiate transfer of operational system tasks from the Wildland Fire EWS consortium to regional agencies
- Presentation of results at GEO Plenary and Ministerial Meeting (2010)

D. 2011-2012
- Complete transfer of daily operational system tasks to regional agencies
- Provide consultation and training as necessary on use of early warning system information in fire management decision-making and implementation of fire programs
- Design detailed model structure to integrate early warning system information from multiple regional systems into a coordinated global system for use in international wildland fire disaster programs
- Provide ongoing calibration and validation of regional systems, as required

Financial Contributions (from GEO Operations Budget)
Co-sponsor contribution (in addition to WMO finances) for the regional workshop in Accra, Ghana (Nov 2007)

Current Status

May 2008
The task is being co-led by the GFMC and GTOS/GOFC-GOLD. Point of contact - is W.J. (Bill) de Groot (GOFC-GOLD Fire IT, and Canadian Forest Service); co-leader is Johann G. Goldammer (GFMC, and GOFC-GOLD Fire IT).

December 2007
Presentations of the Global Wildland Fire Early Warning System at UNOOSA COPUOS STSC 44th Session - 16 February 2007, the 4th International Wildland Fire Conference, Seville, Spain, May 2007 and the GEO Capacity Building Workshop in Sevilla, 10-11 September


GEO supported GOFC-GOLD Workshop on the Requirements for a Fire Early Warning System for Africa, in conjunction with the West Africa Regional Network Meeting on Earth Observation and Environmental Change, 12-16 November 2007, University of Ghana (Legon), Accra, Ghana

Task team made contributions to the publication “The Full Picture” and to the Early Achievements Annex 100 First Steps to GEOSS, both presented at the GEO Ministerial Summit of Cape Town 30 November 2007

Next major event
Disasters Task DI-06-13

December 2006

Revision of title and content of the Task, as a result of the approval of the 2007-2009 Workplan.
The task is being co-led by the GFMC and GTOS/GOFC-GOLD. The point of contact is Johann G. Goldammer (GFMC).

The status of December 2006 is reflected by the preparation of the project “Global Early Warning System for Wildland Fire” presented at EWC-III (March 2006). Updates of existing wildland fire early warning systems including scientific, technical and political developments are provided regularly on the GFMC Wildland Fire Early Warning Portal (http://www.fire.uni-freiburg.de/fw/iew.htm) and the Global Wildland Fire Monitoring Portal (http://www.fire.uni-freiburg.de/current/globalfire.htm). The envisaged design of the system has been presented to the WMO Commission on Agrometeorology (New Delhi, India, October 2006) and to the 5th International Conference on Forest Fire Research (Figueira da Foz, Portugal, November 2006).

September 2006

(Update by Giovanni Rum, GEO Secretariat) During the Davos Conference on Disaster Reduction, held in August 2006, the GEO Secretariat has started discussions with the Global Fire Monitoring Center (GFMC), leading the UN-ISDR Global Wildland Fire Network. This initiative has been preliminarily identified as the reference option for the implementation of an operational global early warning system. Next step will be the formal inclusion of this Organization in the task contributors (possibly within task leadership).

The 2nd Workshop on Geostationary Fire Monitoring and Applications took place on 4-6 December 2006 at EUMETSAT, Darmstadt, Germany and will further develop the use of geostationary satellite data for fire detection and volcanic ash monitoring.

June 2006

In April the Water Center for the Humid Tropics of Latin America & the Caribbean in partnership with NASA, the University of Maryland and USAID launched the Regional Fire Alert System under the Regional Visualization & Monitoring System (SERVIR http://servir.nasa.cathalac.org/).

The new SERVIR Fire Alert System allows users to receive daily email alerts when fires are detected in their area of interest.

Coordination with other tasks of committees

GEO Member Potential Contributions Reported to date

Task Participants – Early Warning System for Wildland Fire Consortium

<table>
<thead>
<tr>
<th>Type</th>
<th>Representing</th>
<th>Organisation</th>
<th>Name</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Task POC</td>
<td>GTOS</td>
<td>GOFC-GOLD/Canadian Forest Service</td>
<td>Bill de Groot</td>
<td><a href="mailto:Bill.DeGroot@NRCan.gc.ca">Bill.DeGroot@NRCan.gc.ca</a></td>
</tr>
<tr>
<td>Task co-leader</td>
<td>GTOS</td>
<td>GOFC-GOLD/Global Fire Monitoring Centre</td>
<td>Johann G. Goldammer</td>
<td><a href="mailto:johann.goldammer@fire.uni-freiburg.de">johann.goldammer@fire.uni-freiburg.de</a></td>
</tr>
<tr>
<td>Participant</td>
<td>Australia</td>
<td>Centre for Australian Weather and Climate Research</td>
<td>Graham Mills</td>
<td><a href="mailto:G.Mills@bom.gov.au">G.Mills@bom.gov.au</a></td>
</tr>
<tr>
<td>Participant</td>
<td>GTOS</td>
<td>GOFC-GOLD/University of Maryland</td>
<td>Chris Justice</td>
<td><a href="mailto:justice@hermes.geog.umd.edu">justice@hermes.geog.umd.edu</a></td>
</tr>
<tr>
<td>Participant</td>
<td>GTOS</td>
<td>GOFC-GOLD/University of Maryland</td>
<td>Ivan Csiszar</td>
<td><a href="mailto:icsiszar@hermes.geog.umd.edu">icsiszar@hermes.geog.umd.edu</a></td>
</tr>
<tr>
<td>Participant</td>
<td>GTOS</td>
<td>GOFC-GOLD/Canadian Forest Service</td>
<td>Michael Brady</td>
<td><a href="mailto:MBrady@NRCan.gc.ca">MBrady@NRCan.gc.ca</a></td>
</tr>
<tr>
<td>Participant</td>
<td>GTOS</td>
<td>GOFC-GOLD/Canadian Forest Service</td>
<td>Tim Lynham</td>
<td><a href="mailto:Tim.Lynham@NRCan.gc.ca">Tim.Lynham@NRCan.gc.ca</a></td>
</tr>
</tbody>
</table>
Besides the international consortium “Global Wildland Fire Early Warning” (cf. DoW) which has received a number of letters of endorsement for the development of the “Global Early Warning System for Wildland Fire” by international organizations and governments (http://www.fire.uni-freiburg.de/fwf/EWS.htm) an interest to contribute has been expressed by the following countries (by 31 December 2006):

**Portugal**

(i) Information products and link to model experts and to end users. (ii) Design, analysis and development of environmental monitoring systems, system integration, risk maps and related factors for forest fire surveillance, alerts and combat. Can use experience from INOV system Ciclope. (iii) It is part of the IM's activities to calculate the forest fire index, in a daily basis. A forest fire index (global, if with resort to EPS or for the MSG covering area) will be included in the list of products to submit to EUMETSAT in the scope of the LSA SAF project or to the EC in the scope of GMES (post-GEOLAND).

A new contributor has expressed his willingness to contribute to the execution of the task:
Skysoft Portugal - Software e Tecnologias de Informação S.A.

**Japan**

FFPRI: To continue operational use of the existing forest-fire early detection system.

AFFRC: Continuing operation of the practical use of the forest fire early detect system.

JAXA to contribute through the Sentinel Asia Project.

**Relevant EC Projects**

DG-ENTR: PREVIEW

DG-RTD: FIRE PARADOX, ARMONIA

**Institutions Interested in Project Outcomes and Use**
<table>
<thead>
<tr>
<th>Type</th>
<th>Representing</th>
<th>Organisation</th>
<th>Name</th>
<th>EmailAddress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contributor</td>
<td>FAO</td>
<td>FRA</td>
<td>Peter Holmgren</td>
<td><a href="mailto:Peter.Holmgren@fao.org">Peter.Holmgren@fao.org</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Greece</td>
<td>National Observatory of Athens - Institute of Environment Research and Sustainable Development (IERSD)</td>
<td>Andriam Retalis</td>
<td><a href="mailto:adrianr@meteo.noa.gr">adrianr@meteo.noa.gr</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Greece</td>
<td>National Observatory of Athens - Institute of Environment Research and Sustainable Development (IERSD)</td>
<td>Christos Giannakopoulos</td>
<td><a href="mailto:cgiannak@meteo.noa.gr">cgiannak@meteo.noa.gr</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Greece</td>
<td>National Observatory of Athens - Institute of Environment Research and Sustainable Development (IERSD)</td>
<td>Costas Lagouvardos</td>
<td><a href="mailto:lagouvard@meteo.noa.gr">lagouvard@meteo.noa.gr</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Greece</td>
<td>National Observatory of Athens - Institute of Environment Research and Sustainable Development (IERSD)</td>
<td>Vasso Kotroni</td>
<td><a href="mailto:kotroni@meteo.noa.gr">kotroni@meteo.noa.gr</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Japan</td>
<td>FFPRI: Forestry and Forest Products Research Institute</td>
<td>Haruo SAWADA</td>
<td><a href="mailto:sawady@ffpri.affrc.go.jp">sawady@ffpri.affrc.go.jp</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Japan</td>
<td>AFFRC: Agriculture, Forestry and Fisheries Research Computer Center</td>
<td>Nobuhiro Nishida</td>
<td><a href="mailto:totoro@affrc.go.jp">totoro@affrc.go.jp</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Japan</td>
<td>JAXA: Japan Aerospace Exploration Agency</td>
<td>Kazuya KAKU</td>
<td><a href="mailto:kaku.kazuya@jjaxa.jp">kaku.kazuya@jjaxa.jp</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Portugal</td>
<td>Instituto Superior Tecnico (ICIST)</td>
<td>Amilcar Soares</td>
<td><a href="mailto:asoares@ist.utl.pt">asoares@ist.utl.pt</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Portugal</td>
<td>Instituto de Meteorologia</td>
<td>Adérito Serrão</td>
<td><a href="mailto:a.serrao@meteo.pt">a.serrao@meteo.pt</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Portugal</td>
<td>Skysoft Portugal - Software e Tecnologias, SA</td>
<td>Sérgio Marques Barbedo</td>
<td><a href="mailto:sergio.barbedo@skysoft.pt">sergio.barbedo@skysoft.pt</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Republic of Korea</td>
<td>Korea Forest Research Institute</td>
<td>Myoung Soo Won</td>
<td><a href="mailto:mswon@foa.go.kr">mswon@foa.go.kr</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>South Africa</td>
<td>CSIR-Meraka Institute</td>
<td>Philip Frost</td>
<td><a href="mailto:pfrost@csir.co.za">pfrost@csir.co.za</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>South Africa</td>
<td>National Disaster Management Centre (NDMC)</td>
<td>Mmboneni Muofhne</td>
<td><a href="mailto:Mmboneni.Muofhne@dst.gov.za">Mmboneni.Muofhne@dst.gov.za</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>Thailand</td>
<td>Geo-informatics and Space Technology Development Agency (GISTDA)</td>
<td>Chaowalit Silapathong</td>
<td><a href="mailto:chaow@gistda.or.th">chaow@gistda.or.th</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>UNOSAT</td>
<td>United Nations Institute for Training and Research Operational Satellite Applications Programme</td>
<td>Francesco Pisano</td>
<td><a href="mailto:francesco.pisano@unitar.org">francesco.pisano@unitar.org</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>UNOSAT</td>
<td>United Nations Institute for Training and Research Operational Satellite Applications Programme</td>
<td>Alain Retiere</td>
<td><a href="mailto:alain.retiere@unosat.org">alain.retiere@unosat.org</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>USA</td>
<td>NOAA</td>
<td>Chet Koblinsky</td>
<td><a href="mailto:Chester.j.koblinsky@noaa.gov">Chester.j.koblinsky@noaa.gov</a></td>
</tr>
<tr>
<td>Contributor</td>
<td>WMO</td>
<td>AREP</td>
<td>Liisa Jalkanen</td>
<td><a href="mailto:ljalkanen@wmo.int">ljalkanen@wmo.int</a></td>
</tr>
</tbody>
</table>