Prof. Valeriy A. Menshikov (Russia)
International Academy of Astronautics (IAA), Member of Board of Trustees,
Russian Academy of Cosmonautics named after K.E. Tsiolkovskiy, Vice-President,
IGMASS Project Manager from IAA
Results of satellite image with cloudy fields anomalies upper activated subduction zones just before earthquake, which appeared more than day before the disaster.

Done by researcher Dr. Lidya Morozova, Far East Branch, Russian Academy of Sciences.
International Global Aerospace Monitoring System (IGMASS) is a large organizational and technical system, integrating itself side by side especially designing and creating space constellation of small and micro satellites with onboard equipment to monitor and detect early signs of destructive emergencies and existing and advanced national and international airborne and ground facilities (contact and distant sensors), Earth observation facilities, meteorological, space communications and navigation systems (or especially allocated informational or organizing and technical resources), including appropriate launch, control and satellite acquisition devices and infrastructure, variety of receiving and processing monitoring data equipment.
IGMASS' Creation Purpose

forehanded warning of world community about risks and threats of natural disasters and man-caused emergencies, next step forward development and integration of planetary informational and navigation-telecommunication recourses for global threats protection and solving of general humanitarian issues

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IGMASS' Applicability

global and efficient forecasting of natural disasters and man-caused emergencies on the Earth and at outer space on the basis of integrated utilization of world wide space monitoring potential
Permanent and continuous space monitoring of the Earth lithosphere, atmosphere, ionosphere and outer space with the purpose of revelation early signs of dangerous natural disasters and man-caused emergencies

Collecting, onboard satellite processing and transmitting monitoring data into ground space information receiving stations

Generalising and integrated processing global monitoring data, which has been collected from space-based, air-born and ground facilities, at national, regional and international emergency centres; monitoring information interpretation, storage and visual displaying

Near real-time communication to states concerned and specialized UN structures about educible natural and man-made risks and threats
**IGMASS' Advanced Missions**

Proper navigational and telecommunicating acquisition consumers all over the world for emergency operations, catastrophe’s medicine, humanitarian operations; transport Corridors systems creation, optimisation cargo and people transfer; abolition of illiteracy, preservation of cultural values, distant learning concept and experts training development

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Effective warning about global risks an threats in and from outer space: asteroid danger and anomaly phenomena

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Gradual forming unified planetary “informational environment of security” for the convenience of reducing global risks and arising threats protection
IGMASS Structure

- **SPIDER-UN**
- **GEOSS**
- **KOSPAS-SARSAT**
- **GMES**
- **Sentinel Asia**
- **DMC**
- **GCOS**
- **Disaster Charter**
- **IONOSAT**

**Own Developed IGMAS Orbital Segment:**
small, micro monitoring satellites, equipped by variety of advanced instruments for detection early signs of natural disasters and technogenic catastrophes

**International, regional and national projects and programmes of monitoring of natural disasters and emergencies**

**International, regional and national space systems**

**Meteorological**

**Navigational**

**Observation and RSC**

**Communication**

**IGMASS Ground Segment:**
International Monitoring Data stations, International and Regional Crisis Management Centers; Launching and Flight Control facilities, Global Distant Learning etc and Catastrophe’s Medicine Communication Infrastructure
IGMASS MONITORING DATA GROUND INFRASTRUCTURE

Facilities for receiving and proceeding of satellite monitoring data (disasters’ feature detection)

Facilities of telecommunication systems
INTERNATIONAL CRISIS MANAGEMENT CENTRES

UPPER LEVEL: utilization of monitoring information

NATIONAL AND REGIONAL EMERGENCIES FORCES

REGIONAL CENTRES OF AIRBORNE AND GROUND SENSORS
MONITORING DATA COLLECTING AND PROCEEDING

NATIONAL AND REGIONAL CENTRES CRISIS MANAGEMENT

INTERNATIONAL MONITORING DATA RECEIVING STATIONS (5 stations all over the world)

MEDIUM LEVEL: interpretation of monitoring data

NATIONAL AND REGIONAL MONITORING DATA RECEIVING STATIONS

International, regional and national ground facilities (contact and distant sensors)

LOW LEVEL: receiving and proceeding of monitoring data
Main satellite characteristics
Mass (max): 120 - 400 kg;
Mass of payload: 40÷120 kg.
Lifetime:
Satellite of upper level – up to 10 years,
Satellite of lower level – 5 - 7 years

Orbital structure:
Number of satellites in constellation:
Satellite of upper level – 6,
Satellite of lower level – 3-4.
Orbits:
Satellite of upper level – GEO with even distribution of satellites in orbit plane,
Satellite of upper level – SSO, H=600-700 km, with even distribution of orbit planes along longitude of ascending node

Payload
Highly sensitive radiometric visible and IR range equipment, low (LF) and high frequency (HF) wave complexes, plasma complexes, complexes to monitor charged particles, magnetometers, mass-analyzers, spectrometers
Countries Information-Source

Institutions

Research Bodies

Countries Information-Customers

UNIVERSITIES, RESEARCH CENTRES AND LABORATORIES

MAIN TECHNICAL CENTRE

TECHNICAL CENTRES

Satellite Communication (VSAT)

Ground Communication Channels (Internet, digital data transmitting)

Knowledge Sources

Knowledge customers
Catastrophe Medicine IGMAS Subsystem

Orbital Constellation of International, Regional and Domestic Telecommunication Systems

Orbital constellation Global Navigation Systems

GPS NAVSTAR
Galileo
GLONASS

Medical Offices:
National centres of Catastrophes Medicine, its regional and territorial branches, clinical bases; telemedicine systems

Casualties:
- participants of extreme expeditions;
- jammed up at the zones of emergencies;
- persons requested permanent medical control

Purpose: stature control, medical consulting the victims of emergencies
IGMASS Project Initialization

Presenting on profile International scientific forums

Official presenting to the International Academy of Astronautics (IAA)

Project Manager Assignment and IGM ASS’ working experts group creation (from IAA)

Project Researches and preparing of IGM ASS’ working experts group conclusion

Submitting Project Researches and IGM ASS’ working experts group conclusion to the IAA.

Project detailed discussion and making decision about its submitting to the UN

Dneprpetrovsk, Ukraine (2007, 2009); Korolyov, Russia; Tunis; Shanghai, China (2008); Versailles, France (2009); Rome, Italy (2010),

Glasgow, Scotland (2008)

Paris, France (2009)

Yubileynyy, Russia (2009)

Daejon, Republic of Korea (2009)

Limassol, Cyprus (2009)
Socio-political significance of IGMASS Project realization is an opportunity of unifying world community efforts in the framework of new, joint strategy of peaceful space exploration, which is focusing into providing secure and social sustainable development of globe society in XXI century, based on common and imperishable values of joint, irreversible solving global issues of modern Humanity and preserving the life on the Planet; prospects of strengthening political, diplomatic, economical and scientific positions of countries-participants of IGMASS Project on the ways of parrying unexpectedness's and abruptness's (risks and threats) of contemporary world
Some Proposals of IGMASS Project Designers

1. To support the initiative of IGMASS Project realization in the framework of wide International cooperation under UN aegis, recording it in final documents of 47th Subcommittee Session.

2. To put under consideration of future COPUOS sessions political and juridical aspects of IGMASS Project realization.

3. To form under the Subcommittee special study group on the issues of using advanced space technologies for the purposes of forecasting natural disasters and man-made catastrophes.

4. To engage into “International Public Committee on supporting IGMASS Project”, which has been created due to IAA initiative and resolution of The First International Specialized Symposium (Cyprus, November, 2009), all institutions and persons concerned.
For obtaining additional information about IGMASS Project, please, contact us:

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