ROLE OF THE GEOGRAPHICAL INSTITUTE IN RISK MANAGEMENT, CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT

Bogotá - Colombia
November 2017
Floods
Hailstorm
• LAW 1523 OF 2012

Articulation or the PNGRD with the Information Systems, the Colombian Infraestructure of Spatial Data (ICDE) and the institutional training
1. Strengthen the regulatory framework for management.
2. Improve interagency coordination on the production, acquisition and use.
4. Improving institutional management capacity.

45 institutions involved
ICDE (COORDINATION AND ARTICULATION)

45 GOVERNMENT COMPANIES

Otras Universidades Públicas Universidades Privadas Gobernaciones / Alcaldías Entidades Servicios Públicos
We are all part of the ICDE

Customers/Users
Professionals in GIS
Territorial Entities
Citizens

Knowledge Transfer

Advice, Provision and Use of Information

ICDE at the central level

Knowledge management
Information management
Portfolio management
Regulatory management

New Opportunities: Products and services, High social impact projects, Creation of local IDEs

Advice, control and monitoring

La Información Geográfica de Colombia
Main uses in Colombia of satellite images

**ECOSYSTEMS AND BIODIVERSITY**
- Agricultural
- Livestock
- Silviculture
- Fishing

**MINERAL AND ENERGY RESOURCES**
- Hydrocarbures
- Mining
- Hidric energy
- Biofuels
- Alternatives energies

**REGIONAL AND URBAN PLANNING**
- Transportation
- Infrastructure
- Cadastre

**RISK MANAGEMENT**
- Landslide
- Floods
- Earthquake
- Volcanoes
- Drought
- Weather phenomena
- Fires

**AMBIENTAL MANAGEMENT**
- Water resource
- Oceans and coastal areas
- Atmosphere, meteorology, weather
- Soil

**SECURITY AND DEFENSE**
- Humanitarian health
- Defense
- Illicit crops
- Public health

**BASIC INFORMATION**
- Geology and geomorphology
- Base cartography
- Landcover and landuse
- Statistic production

**CLIMATE CHANGE**
- Land planning

**ENVIRONMENTAL MANAGEMENT**
- Ecosystems and biodiversity
- Water resource
- Oceans and coastal areas
- Atmosphere, meteorology, weather
- Soil

**PRODUCTIVE SYSTEMS**
- Agriculture
- Livestock
- Silviculture
- Fishing

**HEALTH**
- Epidemiology
- Public health
- Health emergencies

**SECURITY AND DEFENSE**
- Hidric energy
- Biofuels
- Alternatives energies

**BASIC INFORMATION**
- Geology and geomorphology
- Base cartography
- Landcover and landuse
- Statistic production

**CLIMATE CHANGE**
- Land planning
Example: Torential landslides in Mocoa (Putumayo).

- **APPLICANT USERS**
  - UNGRD.
  - ALCALDÍA DE MOCOA
  - SGC
  - DANE
  - MADS

- **WHAT INFORMATION WAS AVAILABLE?**
  Satellite images, aerial photography, cartography, cadastre and others.
Example: Torential landslides in Mocoa (Putumayo).
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IMAGES SENTINEL (FREE ACCESS)
In the case of Mocoa, the information was arranged in a FTP for access to the entities of the SNGRD

ftp://132.255.20.145
User: mocoa04042017
password: igac%2124fA$
The BNI is a set of policies, organizations, standards and technologies that work together to produce, share and use geographic and satellite information necessary to collaborate in the development of the country. Administered by IGAC.
Portal Geográfico Nacional

Sectores

El Portal Geográfico Nacional (PGN) contiene cinco (5) secciones que visualizar su información. Dichas secciones son:
PORTAL GEOGRÁFICO NACIONAL (PGN)

520 IGAC viewing services (WMS)
1582 IGAC Download Services (WFS)
INFORMATION RELEASED
SCALE 1:25,000

INFORMATION IN PROCESS OF BEING RELEASED
SCALE 1:25000
December 2010 declaration of economic, social and ecological emergency due to serious public calamity.

Challenge: Access to images and information to support the monitoring and articulation of entities

International cooperation networks IGAC

International Space Charter of Disasters through the Argentine Space Agency CONAE.
## Satellite programs: Monitoring support Floods Colombia

### Multiespectrales:
- Landsat 5
- Spot 5
- Radar
  - Radarsat 2
  - AlosPalsar
- DMC
- RapidEye
- Cosmo-Skymed

### Disaster Monitoring Constellation

Example of remote sensing of the DMC images December 2010.

Fecha: 06/12/2010
Res. Espacial: 22 m
Escena: 400 km
Fuente: DMCii

Example: Flood monitoring 2010 - 2012

Fuente: eoportal/satellite-missions/d/dmc-2g
Examples of satellite images supplied

- **LANDSAT 5**
  
  Date: 03/01/2011
  Spatial Resolution: 30 m
  Escena: 200 km
  Fuente: USGS

- **ALOS-PALSAR**
  
  Date: 06/12/2010
  Polarización HH
  Rep. Espacial: 100 m
  Fuente: CONAE

- **COSMO-SKYMED**
  
  Date: 29/12/2010
  Polarización VV
  Modo: Ultrafino
  Fuente: CONAE

- **RADARSAT 2**
  
  Date: 05/11/2010
  Polarización HH
  Modo: Estándar

  Date: 06/01/2011
  Polarización VV
  Modo: Ultrafino
  Fuente: CONAE

Example: Flood monitoring 2010 - 2012
BACKGROUND FLOOD MONITORING 2010 - 2011

INTERNAL JOINT

IGAC- TECHNICAL AREAS.
(Basic Cartography, Agrological, Cadastral, image processing, spatial analysis).

ARTICULATION WITH ENTITIES

OF. NAC. P Y A DESASTRES, IDEAM, IGAC, DANE

COUNTRY CONTINUING ANSWER MUNICIPAL DEPARTMENTS

REPORTE DE ÁREAS AFECTADAS POR INUNDACIONES 2010 – 2011 RESUMEN 1-5
Agosto, 2011

La Información Geográfica de Colombia
The area interpreted for monitoring covered 25 departments: Antioquia, Arauca, Atlántico, Bolívar, Boyacá, Caldas, Caquetá, Casanare, Cauca, Cesar, Choco, Córdoba, Cundinamarca, Huila, La Guajira, Magdalena, Meta, Nariño, Norte de Santander, Quindío, Risaralda, Santander, Sucre, Tolima, Valle del Cauca.

Scale 1: 100,000

• Moment 1. Emergency 2010 - 2011


Information Generation - Flood Monitoring

- Download Images
- Interpretation and Processing
- Spatial analysis for generating statistics
- Distribution of the layer "areas affected by flood"
Use of geospatial technologies for the generation of threat maps due to floods and mass movements. Jurisdiction CORANTIOQUIA. Phases I-II.
Use of geospatial technologies for the generation of threat maps due to floods and mass movements. Jurisdiction CORANTIOQUIA. Phases I-II.
IGAC-CORPOICA Project. Support for agroclimatic risk analysis: Drought-Floods. 3 Municipalities by Department. (18 departments).

- Multitemporal analyzes:
  - Expansion dynamics and contraction of bodies of water. (Scale 1: 25,000)
  - Dry conditions from spectral indices. (Scale 1: 100,000).
RESULTS IN THE DEPARTMENT OF CESAR

Child's phenomenon -2009

phenomenon of the girl -2011
Spatially the dynamics of expansion and contraction of water bodies -Chimichagua and Curumani, was evidenced in the areas that are part of the swamp complex of Zapatos, located between the departments of Cesar and Magdalena.

Phenomenon of the girl: 04-09/12/2011
Prácticas Recomendadas

Cuando se usa tecnología durante la respuesta a los desastres, tanto de los métodos particular...

En tal sentido, las sociedades y las Oficinas Regionales de Apoyo de ONU-SPIDER están elaborando una serie de prácticas recomendadas que proveen consejos prácticos e instrucciones sobre cómo usar la información satelital en el caso de diversos tipos de amenazas, así como en varias fases del ciclo de la gestión de desastres.

Si tiene alguna pregunta o quiere contar sobre su experiencia en la aplicación de estas prácticas, háganoslo a favor usan la sección de comentarios.
El Salvador
Teacher: Nelson Andres Nieto Valencia

Course: "Interpretation and analysis of radar-type satellite images - Sentinel 1: Applied to the detection of flooded areas during an emergency", organized by the National Coordinator for Disaster Reduction of El Salvador.
Guatemala I
Teacher: Nelson Andres Nieto Valencia

Course: "Interpretation and analysis of radar-type satellite images - Sentinel 1: Applied to the detection of flooded areas during an emergency", organized by the National Coordinator for Disaster Reduction of Guatemala.
Guatemala II
Teacher: Nelson Andres Nieto Valencia

Course: "Interpretation and analysis of radar-type satellite images - Sentinel 1: Applied to the detection of flooded areas during an emergency", organized by the National Coordinator for Disaster Reduction of Guatemala.
Students trained in Colombia - short courses

VIRTUAL COURSES
- Technical Specifications and Quality of Geographic Information
- Geographic Metadata
- Fundamentals of Spatial Data Infrastructure
- Geographic Information
- Implementation of Geographic Information Services Online
- Continuing Specification OGC

REGIONAL TELECENTRO

Trained students in 2017:
- Online Courses: 1525
- Courses: 900

http://geoservice.igac.gov.co/moodle
THANK YOU VERY MUCH