Geospatial Challenges in responding to
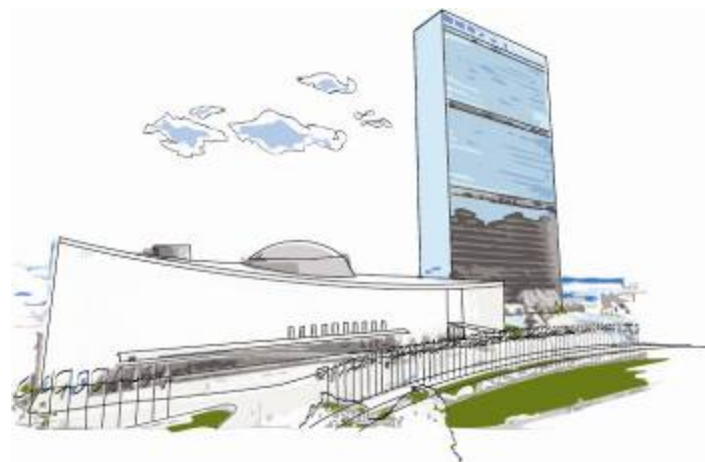# Haiti Earthquake 2010

Kyoung-Soo Eom
Chief, Cartographic Section
Department of Field Support
United Nations

UN Cartographic Section

UN Cartographic Section provides geospatial information
support to the full range of United Nations operations

Principal duties include:

⇨ **Provide accurate and timely geospatial information in support of the decision-making and operational needs of**
  - **. The Security Council**
  - **. UN Secretariat**
  - **. UN Peace Operations (DPKO, DPA, DFS)**
  - **. UN Operations & Crisis Centre (UNOCC)**

⇨ **Programme management for UN field mission GIS operations**

⇨ **Provide technical assistance on international boundary issues**

⇨ **UN mapping authority**

⇨ **Co-Secretariat of UN-GGIM**

Overview of Haiti Earthquake

- **The 2010 Haiti Earthquake is a catastrophic magnitude 7.0 M that hit southern Haiti, with a particularly devastating impact on the capital, Port au Prince on Tuesday, 12 January 2010.**

- **Over 200,000 people were killed, many thousands were injured and some 1.5 million left homeless.**

- **Over 30,000 buildings were severely damaged. More than 1,300 schools and 50 health care facilities were destroyed, including Institut Géographique National (IGN).**

Overview of Haiti Earthquake

Government of Haiti was not functioning!

Presidential Palace: Post-Earthquake

Overview of Haiti Earthquake

Key infrastructure damaged!

Overview of Haiti Earthquake

- **The United Nations was caught in the complex position of being both a victim and a first responder to a natural disaster.**

- **The headquarters of the UN Stabilization Mission in Haiti (MINUSTAH), the Christopher Hotel, collapsed and nearby UN offices and other facilities were severely affected.**

- **The earthquake resulted in the highest number of UN fatalities in a single event, with 102 UN personnel killed (uniformed and civilian) and 29 injured requiring medical evacuation.**

- **The Mission's command and control was severely tested as many of the senior management team were killed, including the SRSG, Deputy SRSG and Acting Police Commissioner.**

Overview of Haiti Earthquake
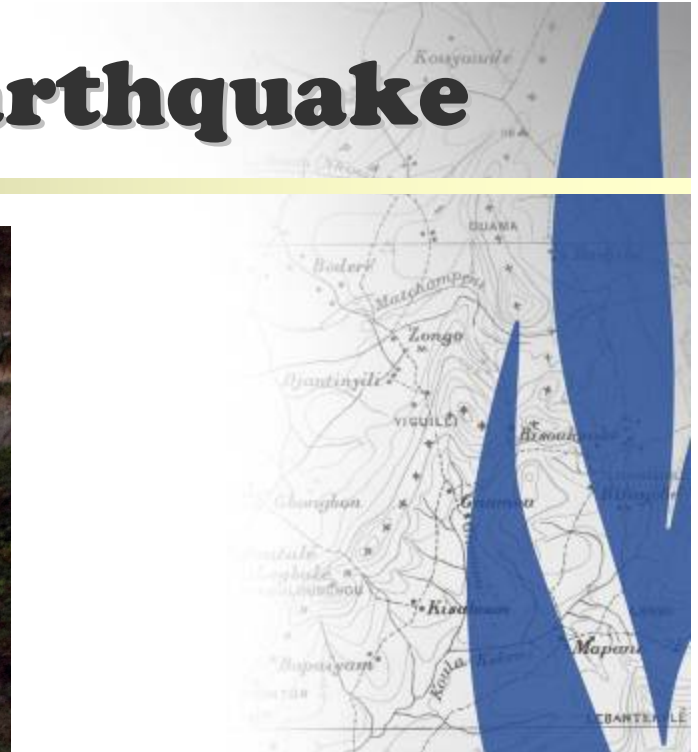
**UN Mission Headquarters in Haiti collapsed
Senior managers of UN Mission were killed**

UN Cartographic Section Experience

- **UNCS coordinated with MINUSTAH, OCHA, OOSA, DSS, UN agencies & key partners to establish an effective mechanism for sharing/dissemination of geo-data in immediate response to and support of disaster relief operations**

- **UNCS triggered International Charter on Space & Major Disaster, and activated EU G-MOSAIC rapid mapping & damage analysis services**

- **Haiti Crisis GIS Operation Team established and all GIS data & products shared with UN offices/agencies, key partner and humanitarian community (MapAction, Usahidi, Crisis Mappers community, etc.) since IGN-Haiti collapsed and GIS data was not accessible.**

- **Damage & Trafficability assessment was completed jointly by G-MOSAIC, UNCS and DLR. JRC provided landslide risk assessment**

UN Cartographic Section Experience

- **Strengthen UN GIS Team in Haiti (MINUSTAH)**

- **China provided satellite image thru UN-SPIDER**

- **World Bank, Google, NOAA, NGA, US South Command, Digital Globe, GeoEye, Esri, GIS Corps and others provided aerial & satellite image, data and services**

- **UN satellite imagery providers (contractors) provided pre/post-quake high-resolution images (free-of-charge)**

- **GIS data/products dissemination for UN operations as well as Humanitarian relief operations:**
  - Web mapping, portal, UN google earth, hard/soft copies, DVD, HDD, etc.
  - UN offices & agencies,
  - World Bank, NATO, NGA, DLR, JRC, US SouthCom, US State Dept, USAID
  - NGOs (MapAction, Open Street Map, etc.)

UN GIS Team in Haiti (MINUSTAH)

UN GIS Team provided GIS services/products (24/7):

- to the needs of MINUSTAH and non-MINUSTAH in support of rescue operations, humanitarian relief operations

- direct support to UN Joint Operation Tasking Centre (JOTC), US Army Joint Task Force (JTF) and Debris Management Task Force (DMTF).

- Over 5,000 GIS products in 2 months were provided to 22 UN agencies, GOs & NGOs, etc.

- DMTF (GoH, UN, UN agencies, IOM and NGOs)
        - Debris management (location, disposal, plan, operation, socio-environmental impact analysis, etc.)
        - Plan & implement for 200K IDPs to resettle in new camps before the rainy season
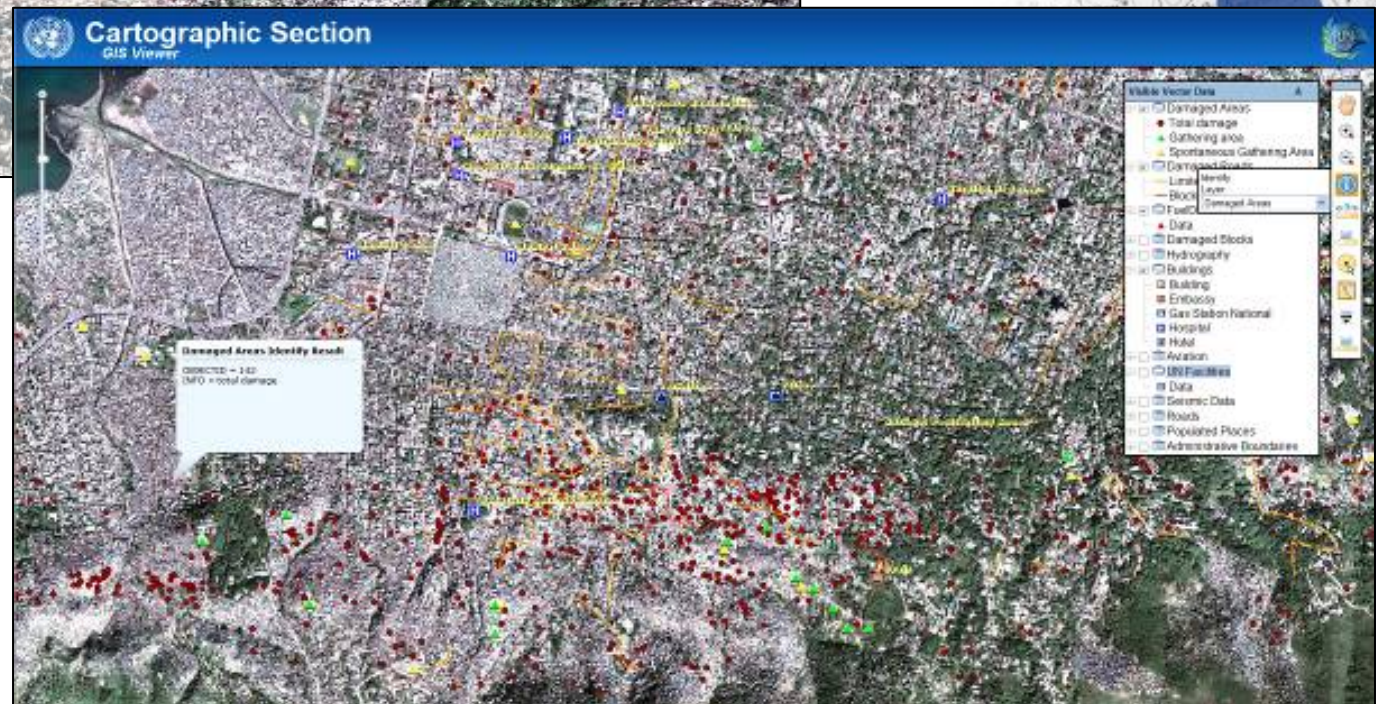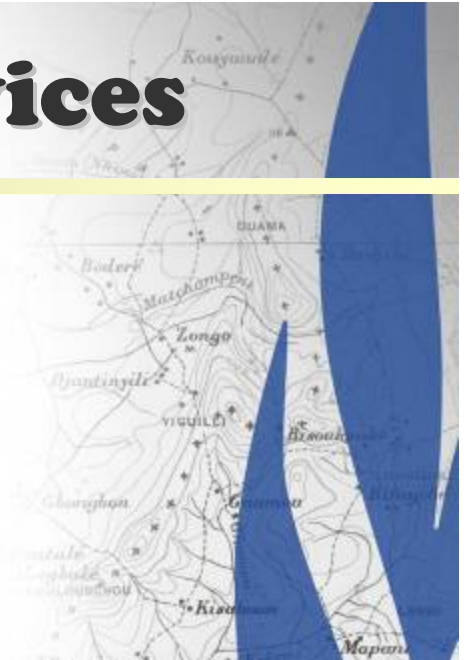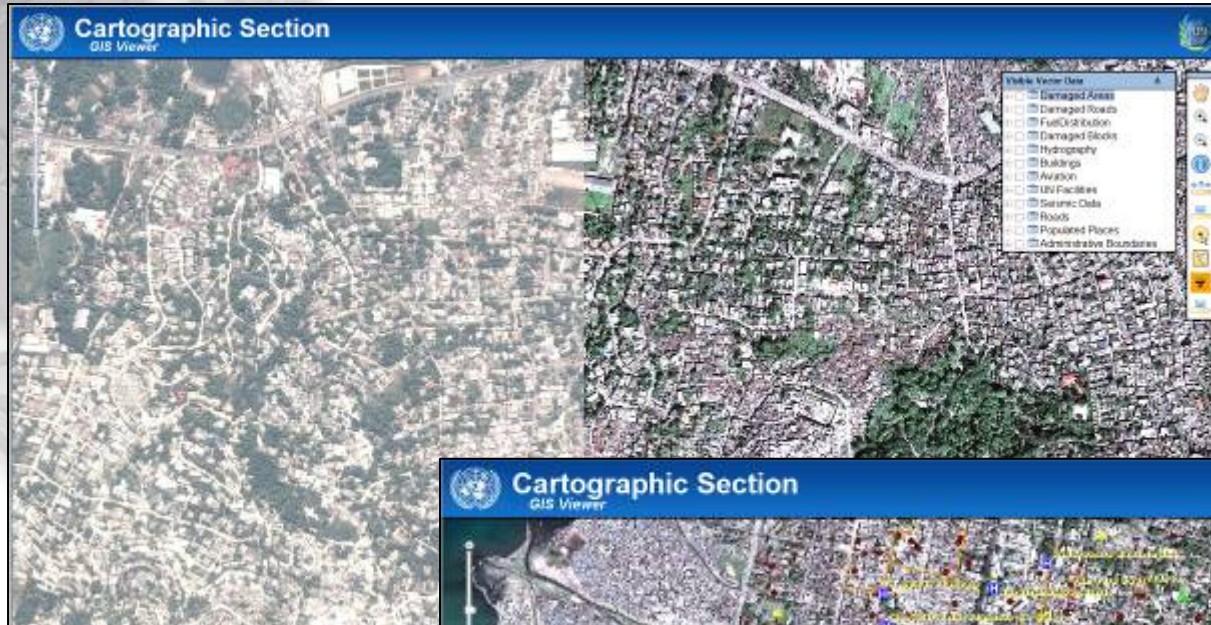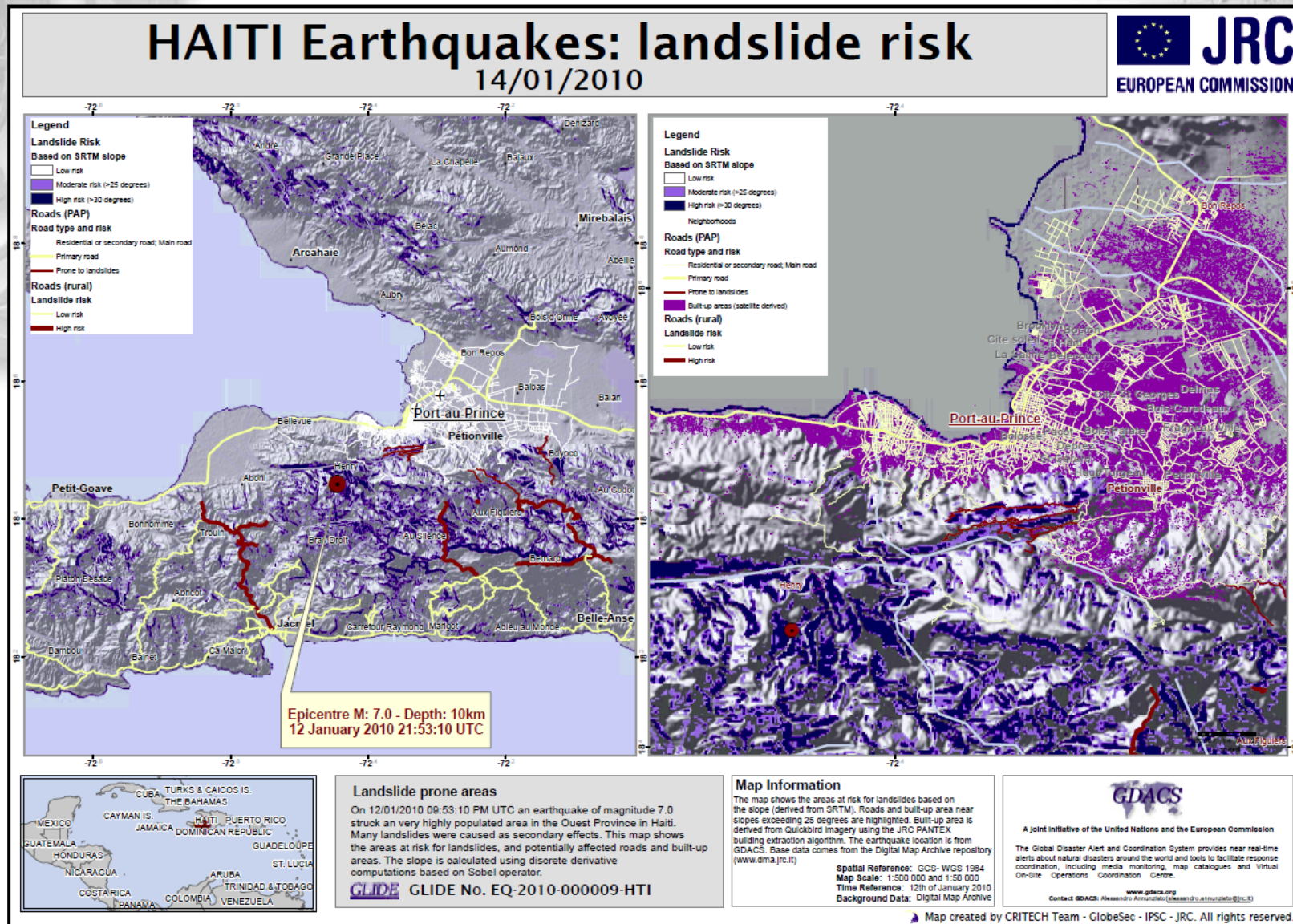
Damage/Trafficability Assessment

HAITI : PORT AU PRINCE
DAMAGE ASSESSMENT
AS OF 13/01/2010
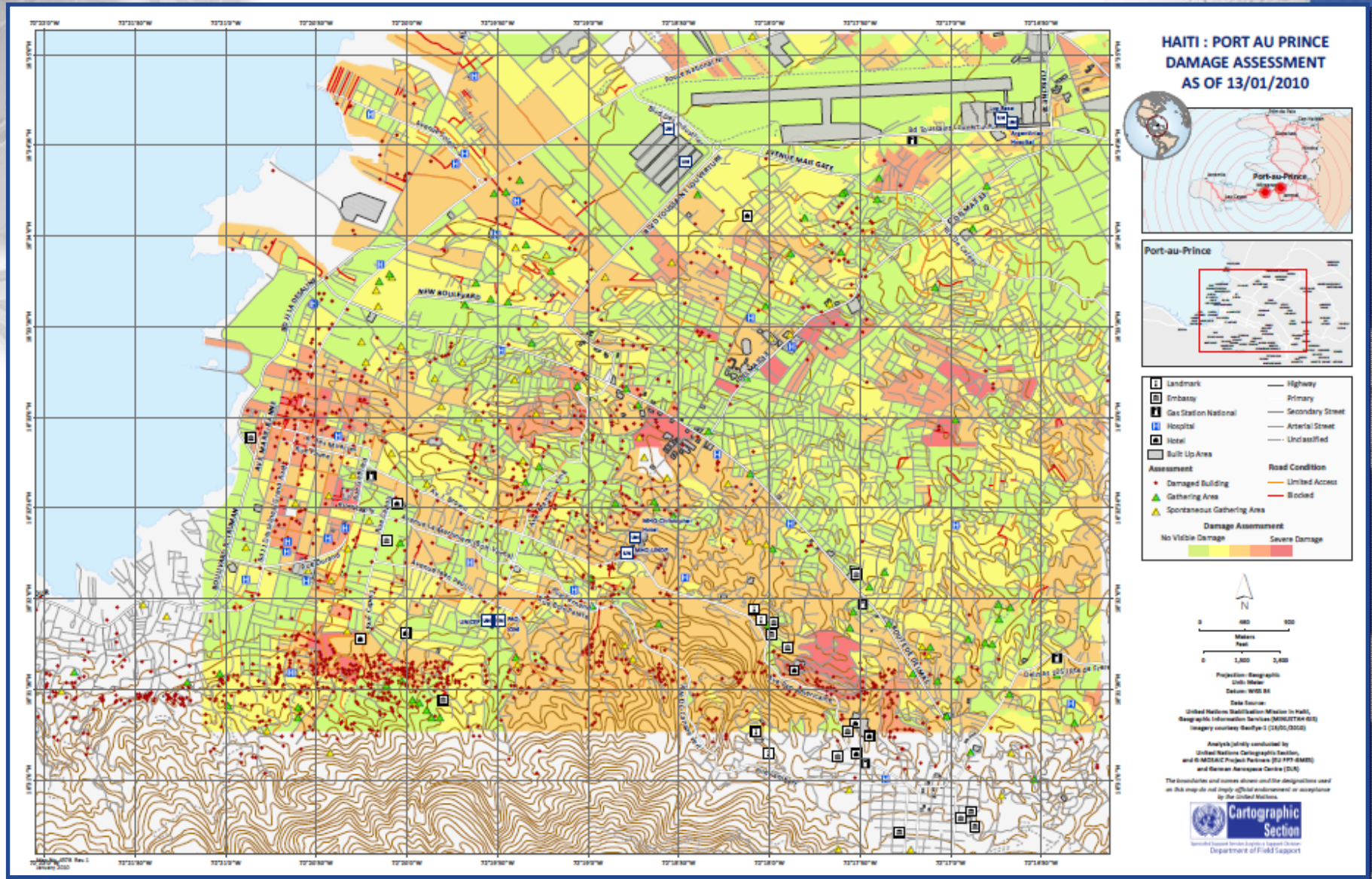
Crisis Web Mapping Services

JRC Landslide Risk Assessment

HAITI Earthquakes: landslide risk
14/01/2010

Logistics & Security Support
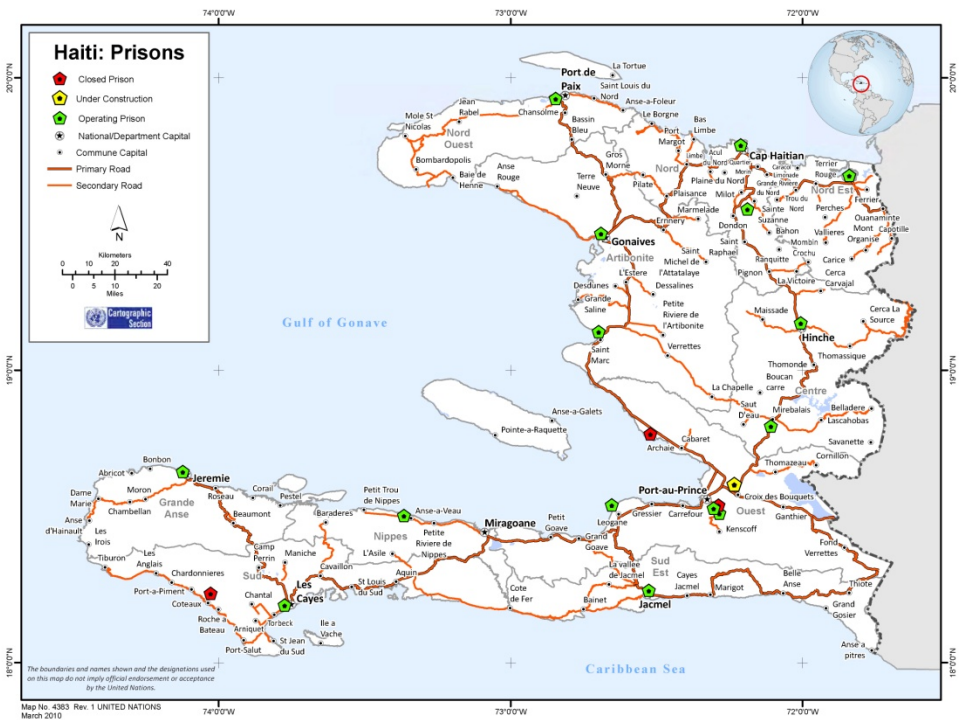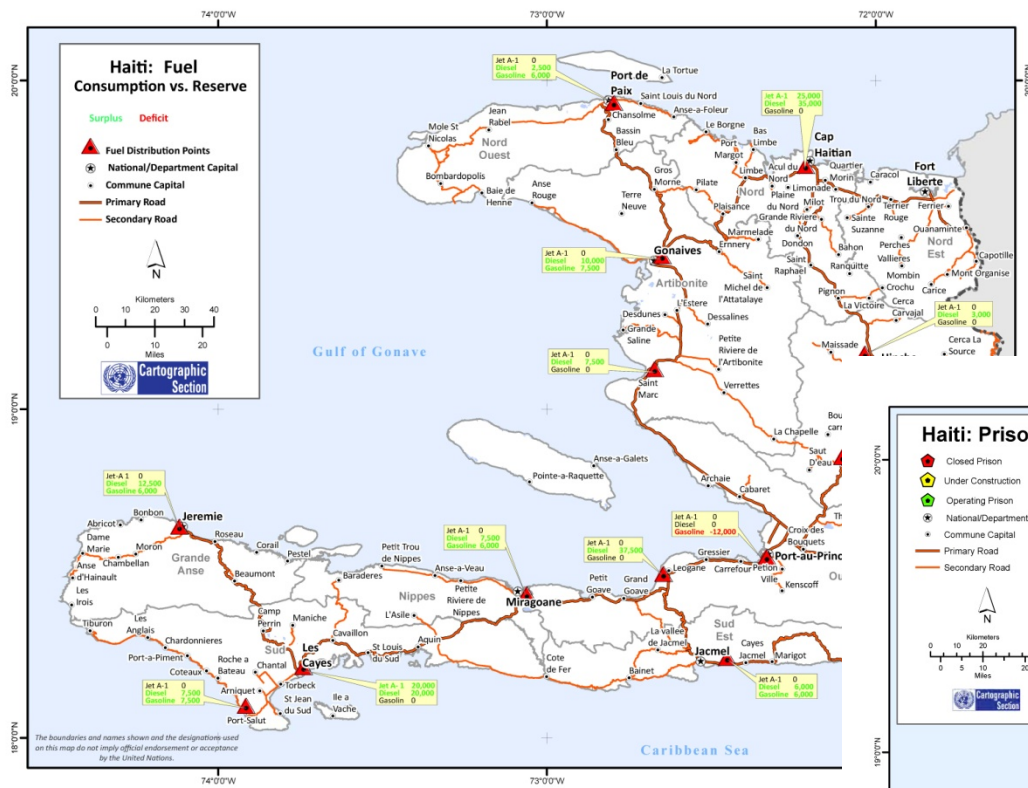
UN and MS Force deployment

Haiti: MINUSTAH Force, UNPOL and Foreign Military Deployment as of 15 February 2010
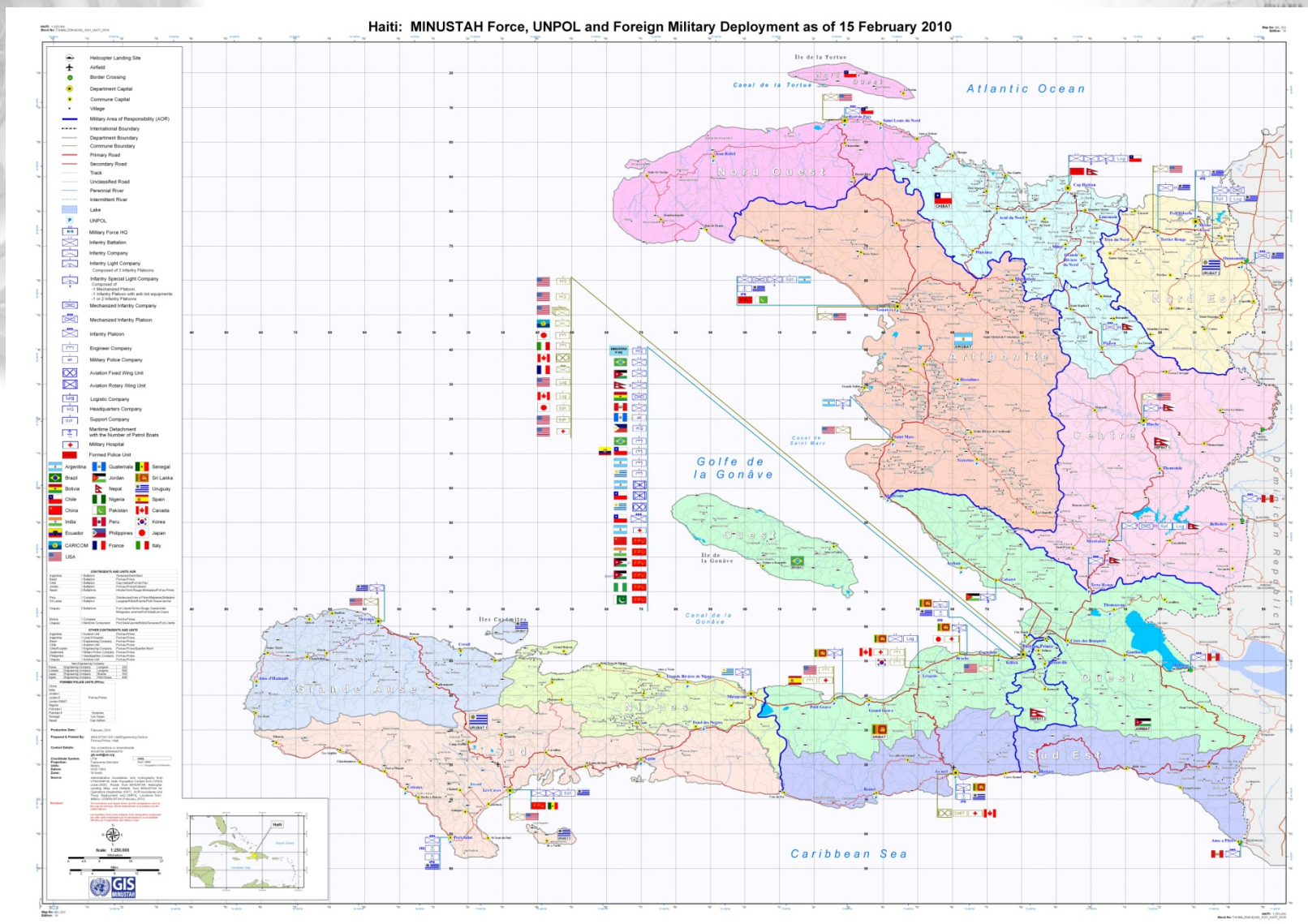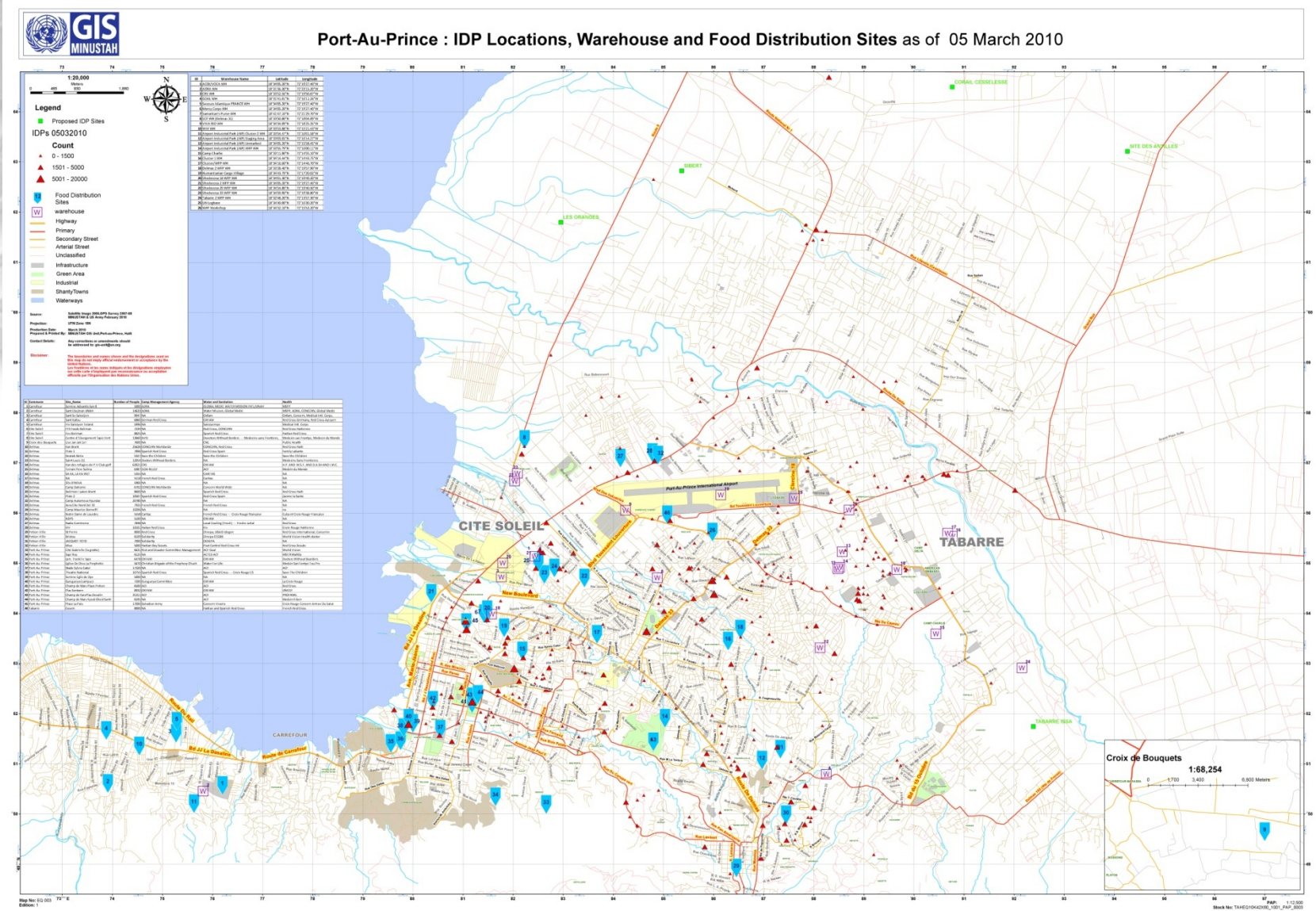
Food Delivery Plan
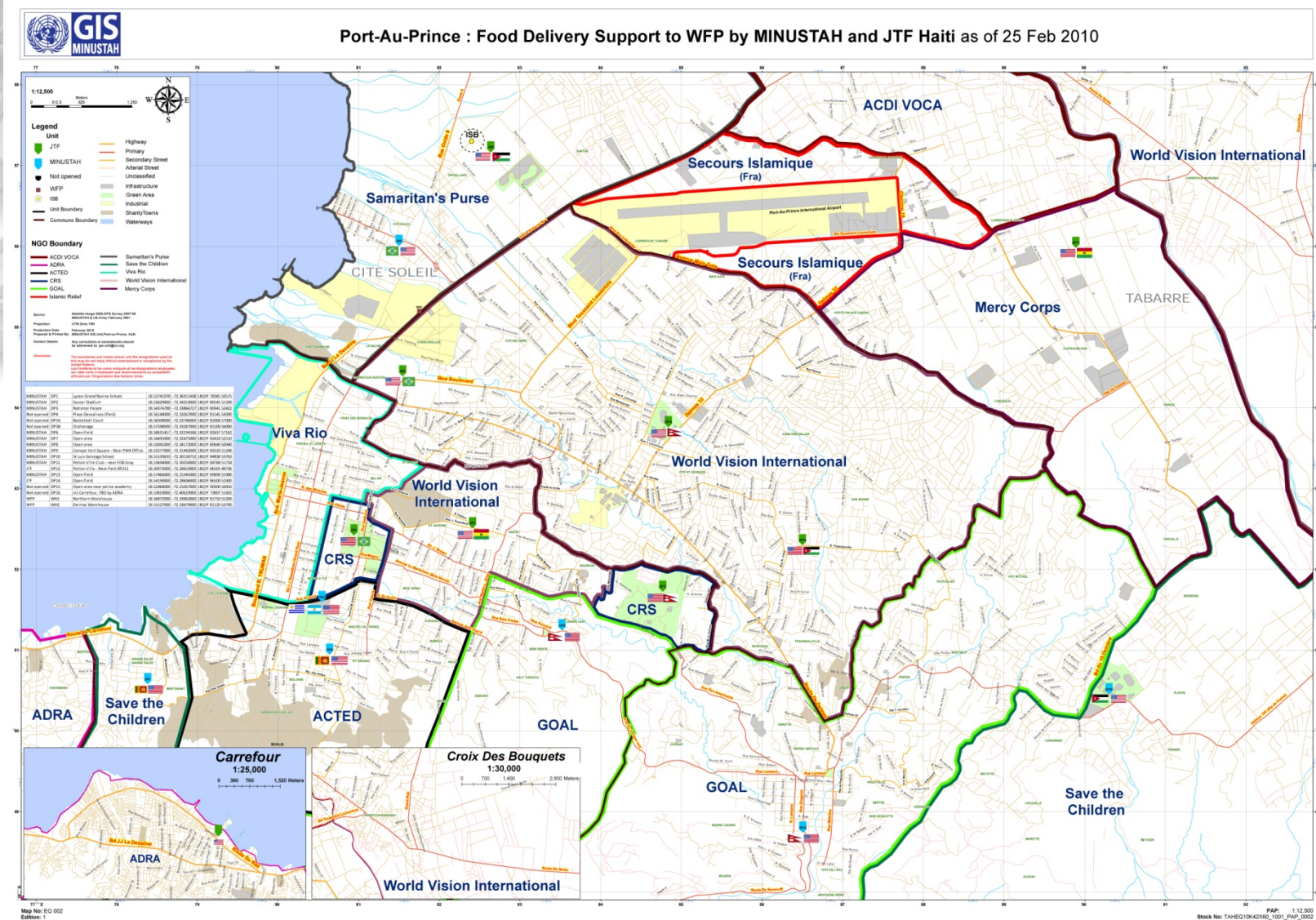
Humanitarian Relief Plan

Lessons Learned

- **Outpouring of goodwill from public/private sectors & NGOs in providing satellite/aerial imagery, GIS services, tools available free-of-charge for humanitarian operations**

- **However, lack of coordination mechanism (not only in geospatial community but also in major humanitarian actors) dealing with geospatial information leads confusion, duplication, ineffective use of resource, delay and even unavailability at the time of needs**

- **Donors, volunteers and supporters are more interested in their own goals, branding and PRs than common integrated goal. Thus, they were not able to act as ONE**

- **Fundamental challenges are non existence of Geo Policy (in line with Humanitarian Policy) and Coordination Mechanism**

Way Forward

- **Priority should be given to develop a Global Policy and Framework, leveraging the good practices and ongoing efforts of Member States and Professional Institutes & organizations.**

- **Global geospatial leaders should be involved in development of Global Policy and Procedure or Mechanism for risk management, response and relief operations**

- **Address the important role of the MGCP initiative, and make it accessible**

- **Propose to establish a GGIM Sub-Committee to develop a Framework and Global policy**

- **Propose to initiate Joint Projects and/or Consortiums to be act as ONE for risk management, response and relief operations**

Operational Concept for Proposed GGIM Framework

- **Proposed GGIM Framework** for risk management, response and relief operations

  - fully **integrate** with the business processes of risk management, response and relief operations

  - **Synchronization Matrix** on **Who** will do **What**, **Where** and **When** in line with the decision-making and operational processes

  - **harmonize/orchestrate** all collective efforts of key actors (member states, public/private sectors, professional organizations, NGOs, academia) in order to maximum use of their expertise, experience, capacity and readiness

  - allow for all actors to share strong **ownership** of each process to collectively act as **ONE**