Global Roads Data: A Strategy for Development

The CODATA Global Roads Data Development Working Group
A Task Group of the UN-GAID e-SDDC

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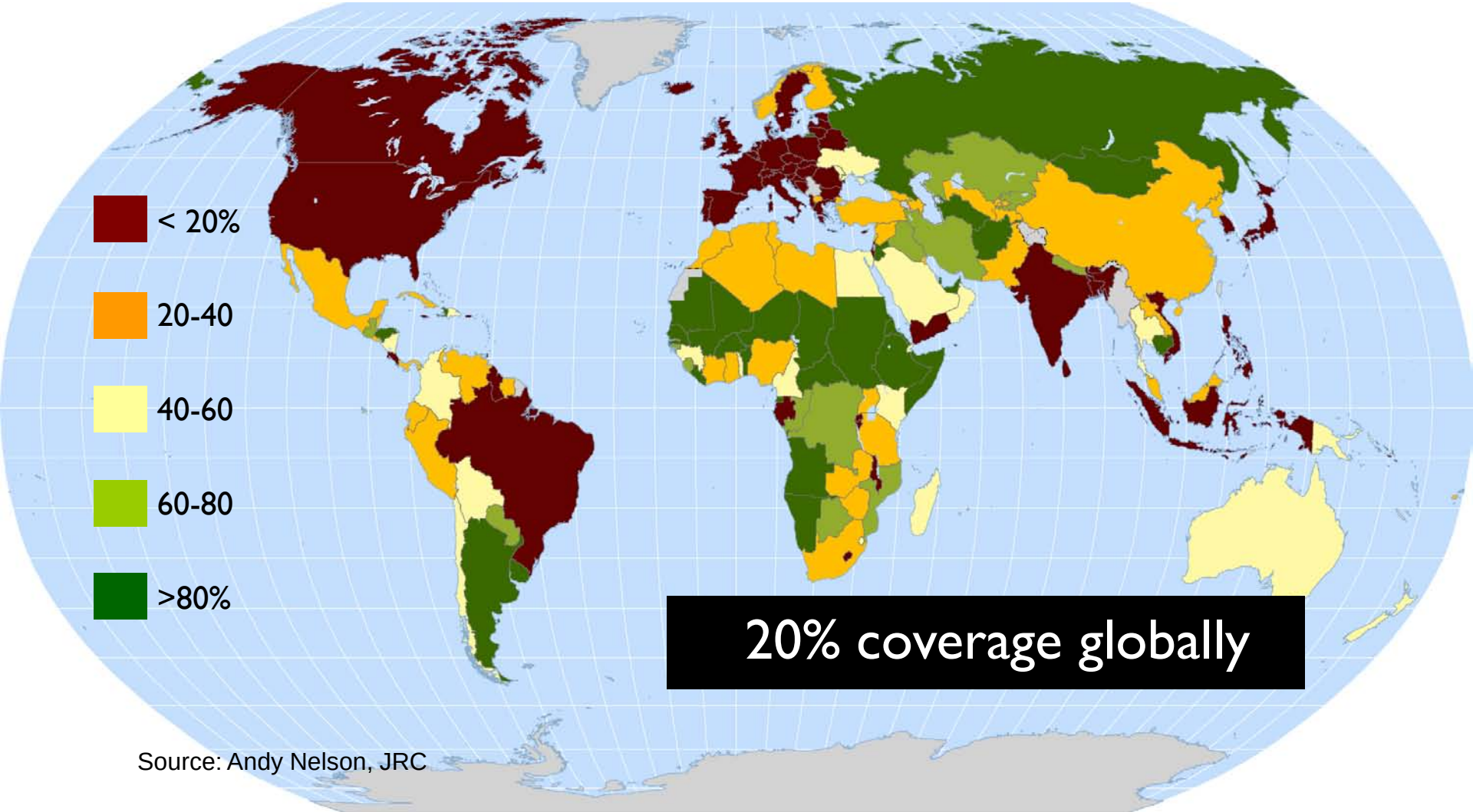
1. The need

- There is currently no globally consistent, reasonably complete, roads data product available to the development, disaster response, health, conservation, and research communities
- Best available is VMAP0 (DCW)
  - Covers only 25-30% of the global roads network
  - Little documentation of sources or verification of spatial accuracy

VMAP0 vs. Int'l Road Statistics

VMAP 0 / road network (IRF) = % coverage, km per country



Source: Andy Nelson, JRC

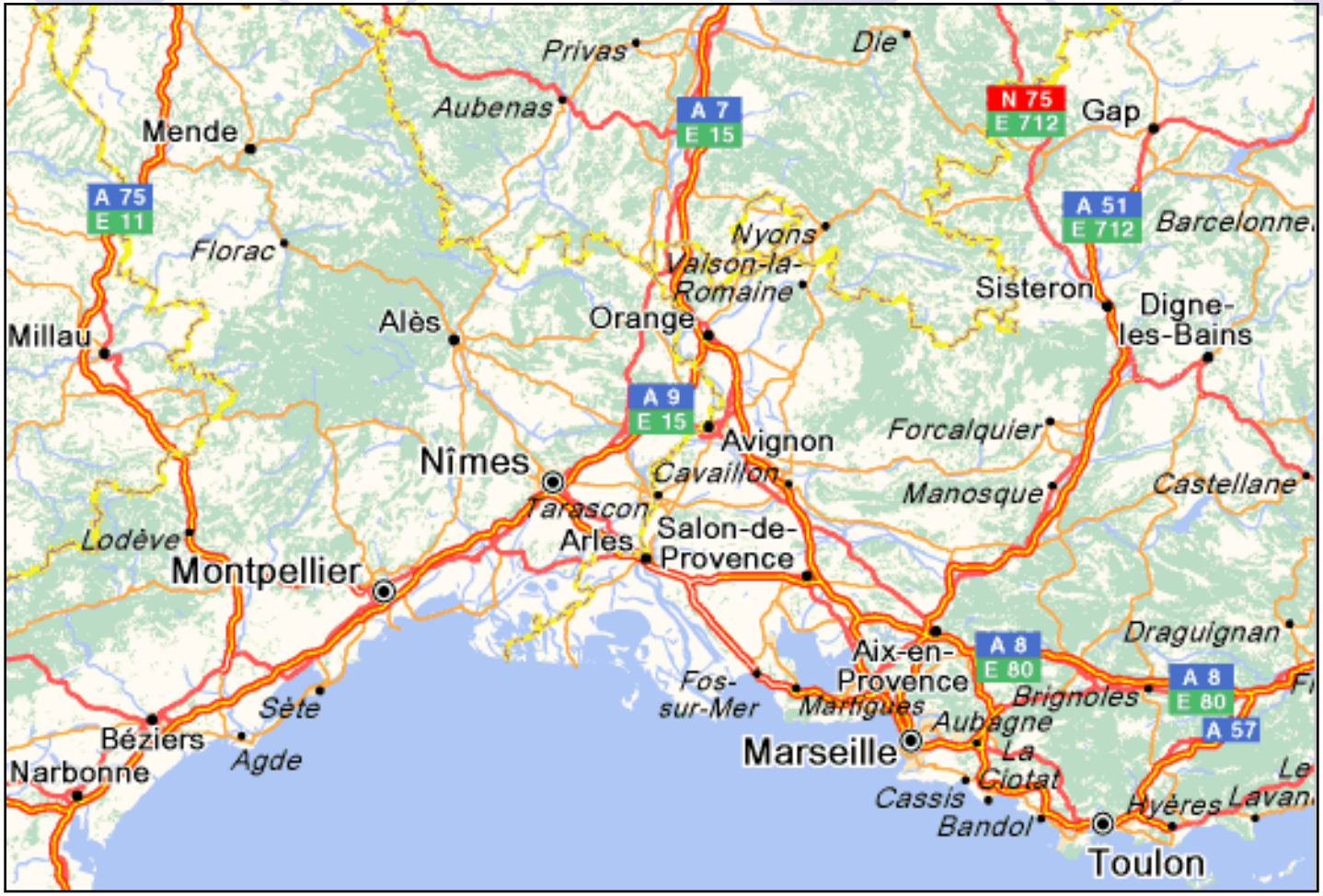
User needs

- Humanitarian response
- Pre- and post-disaster planning
- Economic development
- Environment and land use
- Research community
- Private sector

2. The goal

- To develop a global roads data set (GRDS) that is:
  1. globally consistent (in terms of the underlying data model and attribute coding)
  2. spatially accurate (~50m positional accuracy)
  3. topologically integrated
  4. on an approximate scale of 1:250,000
  5. focused on roads between settlements (not streets)
  6. up-to-date and with the possibility of frequent updates
  7. well documented
  8. freely distributed (on attribute only basis)

Example of a 1:250k product



Source: ViaMichelin at http://www.viamichelin.com/viamichelin/int/dyn/controller/Maps

3. The strategy

- Two stages:
  1. Establish the baseline data set (target: early 2010)
  2. Create a wiki mapping environment for regular updates

Establishing the baseline

- Create a catalog of available national-level data (nearly complete)
- Evaluation and validation of existing data
- Creating new roads data using semi-automated extraction techniques from remote sensing imagery and digital topographic maps (with partners at U. of Tokyo, iMMAP, UNOSAT, and Chinese Academy of Sciences)
- Stitching together the data into a topologically consistent baseline data set

4. CODATA working group

- A working group has been established under ICSU's Committee on Data for Science & Technology (CODATA)
- This group is overseeing quality control and moving the process forward
- Representatives of CIESIN (Alex de Sherbinin) and International Management & Mine Action Programs (iMMAP)(Olivier Cottray) serve as co-chairs
- Would like to add Nicolas Chavent of UN Joint Logistics Centre in Rome, Italy

CODATA working group members

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5. Current Status (October 2008)

- Adopted as a task group by UN-GAID e-SDDC
- Finalizing the implementation plan
- Developing the catalog of national level data (Africa and Latin America completed)
- A project with NASA-SERVIR to develop improved road data for Ethiopia using automated extraction from ASTER imagery
- CAS has agreed to second a staff member to CIESIN/CODATA for the roads initiative
- Deciding on licensing issues (ODL, PDDL, other?)
- Deciding on which distributed mapping “crowd sourcing” platform to use (OSM, ITHACA, Geoserver, Wikimapia, ArcGIS Server)

For more information on the Global Roads Data workshop and the overall strategy, visit:

http://www.codata.org/taskgroups/WGglobalroads

or

http://www.ciesin.columbia.edu/confluence/display/roads