Initial Evaluation of the GlobeLand30[1] Global Water Bodies Data Set for MENA-WISP Countries

1. National Geomatics Center of China. (2014). *30-meter Global Land Cover Dataset (Globeland30)* [Data set].

GlobeLand30[1] is a global land cover data set developed from 30 m spatial resolution multispectral imagery by the National Geomatics Center in China.

- Landsat and the Chinese Environmental Disaster Alleviation Satellite (HJ-1) provide the source imagery.
- Two products: 2000 and 2010
  - Only 2010 is covered in this evaluation
- The classification scheme includes 10 land cover classes, of which only the water bodies class is shown here.

1. National Geomatics Center of China. (2014). *30-meter Global Land Cover Dataset (Globeland30)* [Data set].

River systems are rated based upon their overall coverage in the GlobeLand30 data set.

Rating System	
Score	**Interpretation**
Poor	River not present
Fair	Less than half* of the river is present
Good	Roughly half* of the river is present
Excellent	Most* of the river is present
Near Perfect	Effectively all* of the river is present

*Based on length, not area

Reference Data:

- National Geographic World Map (Copyright: © Esri 2015)
- World Imagery (Copyright: © Esri 2015)

The Global Width Database for Large Rivers (GWD-LR) from Yamazaki et al. (2014) was examined for average width of the water bodies examined.

- Developed from the Shuddle Radar Topography Mission Water Body Database and the HydroSHEDS flow direction map
- Provides a rough approximation of channel width for large rivers, as context
  - The minimum width included is 183 m.

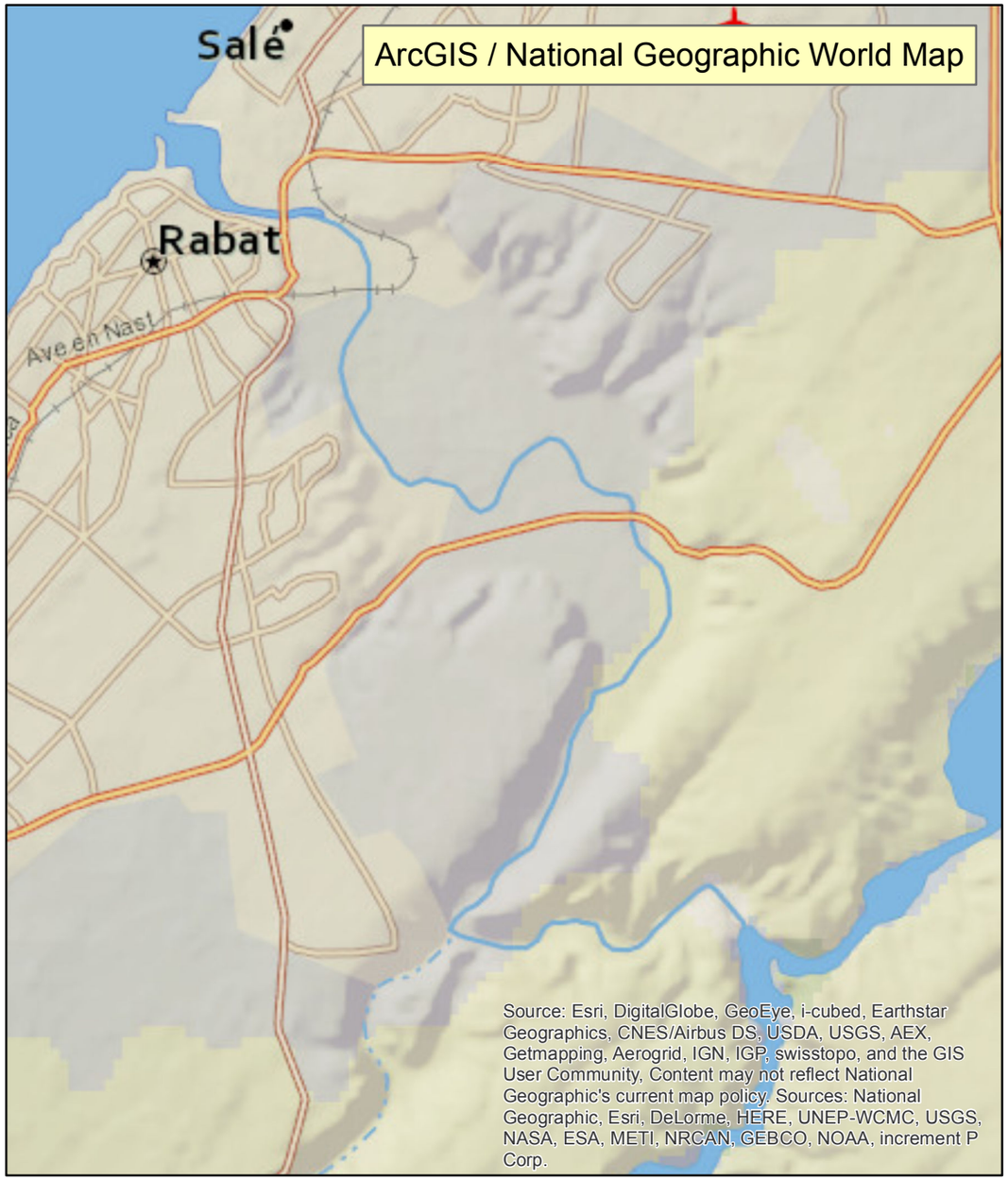
Yamazaki, D., F. O'Loughlin, M. A. Trigg, Z. F. Miller, T. M. Pavelsky, and P. D. Bates. (2014). *Development of the Global Width Database for Large Rivers.* Water Resour. Res., 50, 3467–3480. doi:10.1002/2013WR014664.

In Morocco, Lebanon, and Tunisia, the rivers of interest are too narrow to show up consistently in the GlobeLand30 data set.

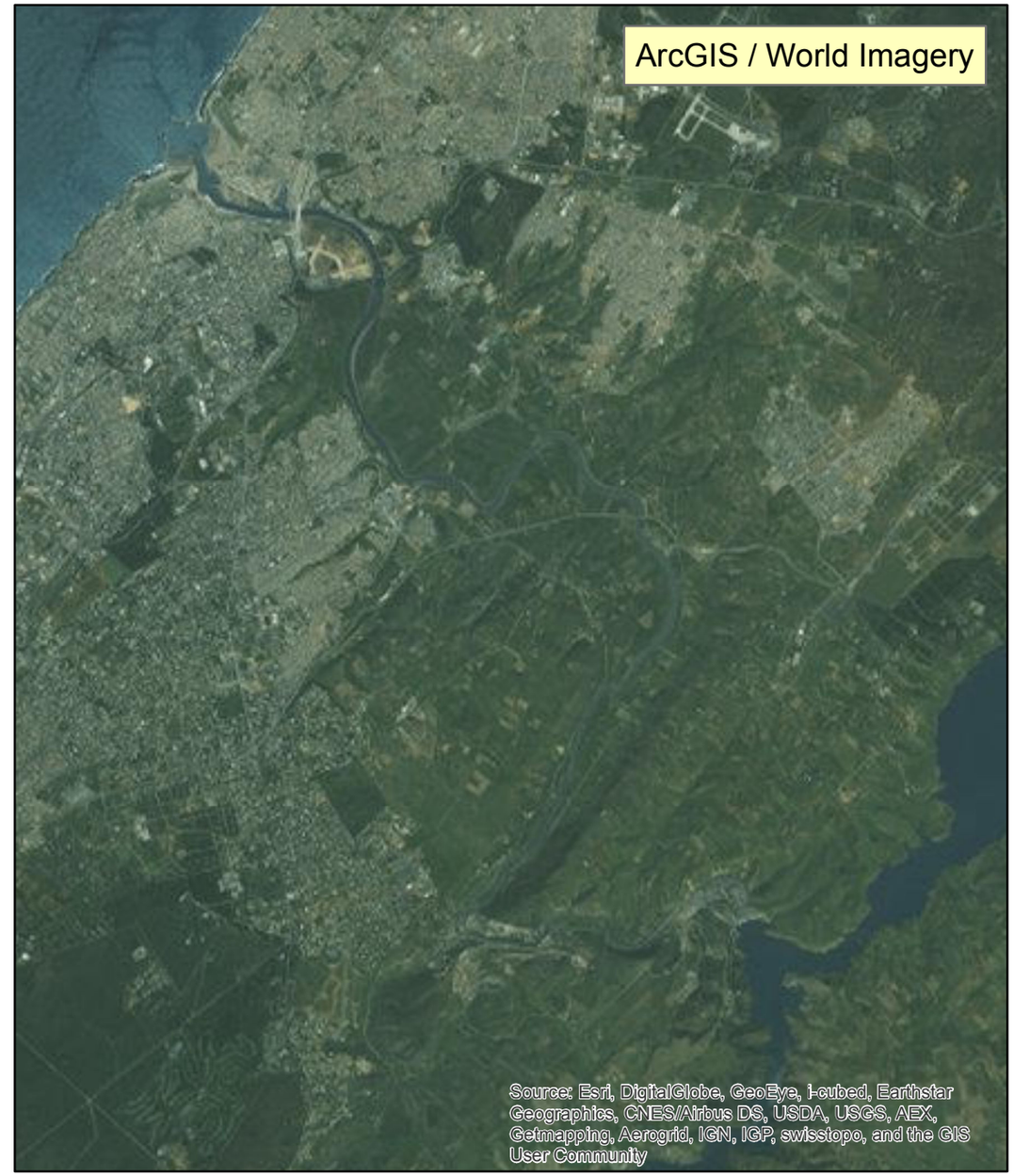
Country	River	GWD-LR Channel Width (m)	Evaluation
Tunisia	Medjerda River (downstream of Barrage Sidi Salem)	TS	Fair
Tunisia	Medjerda River (upstream of Barrage Sidi Salem)	TS	Poor
Morocco	Bou Regreg (downstream of Barrage Mohammed Ben Abdellah)	TS	Excellent
Morocco	Bou Regreg (upstream of Barrage Mohammed Ben Abdellah)	TS	Fair
Morocco	Sebou*	183	Near Perfect
Lebanon	Awali	TS	Poor

TS = Too small to appear in GWD-LR (less than 183 m in width)
*The largest river in Morocco by discharge, included for reference

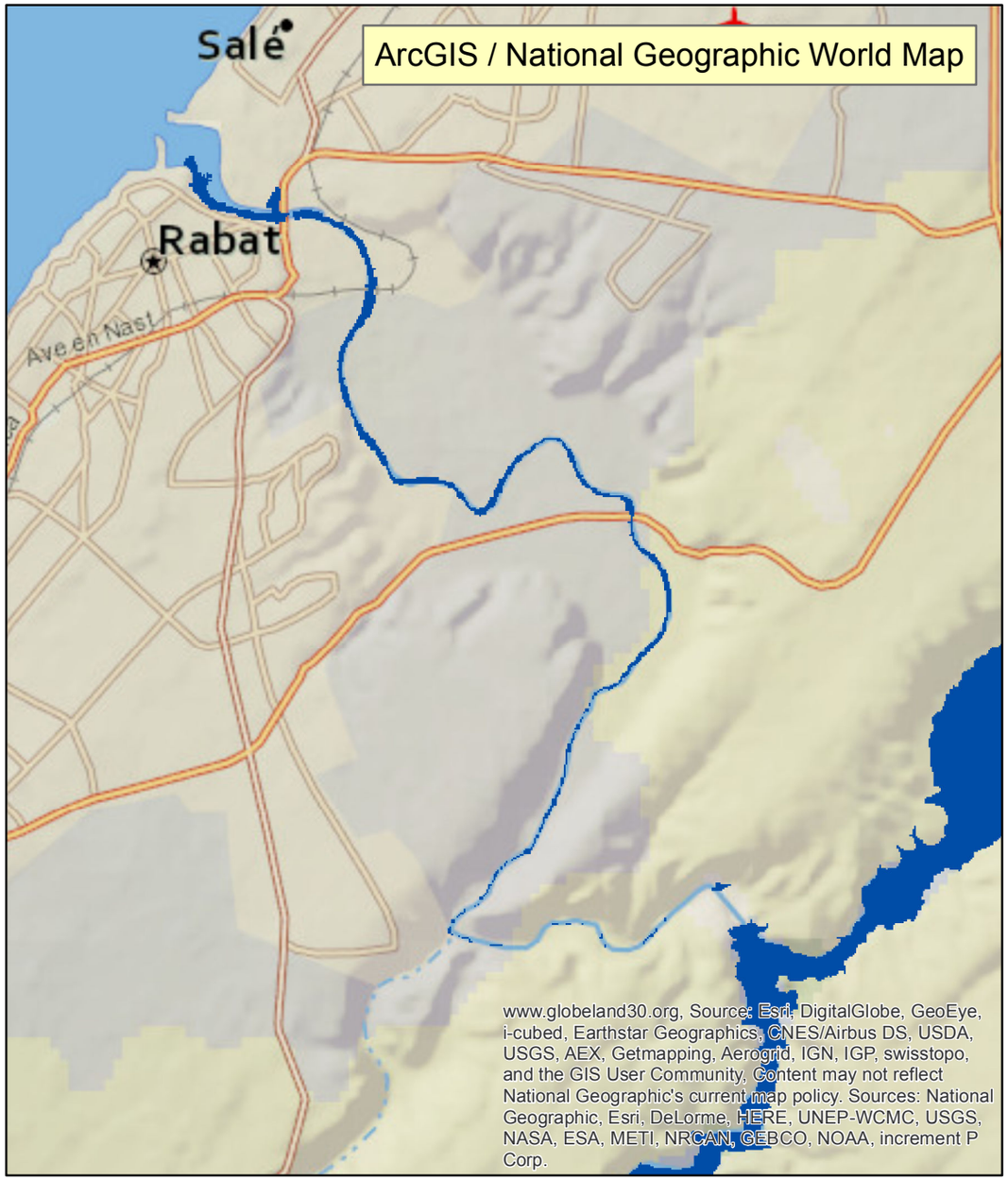
Example: Lower Bouregreg, Morocco (w/o GLC30 Water)



0 4 8 Kilometers



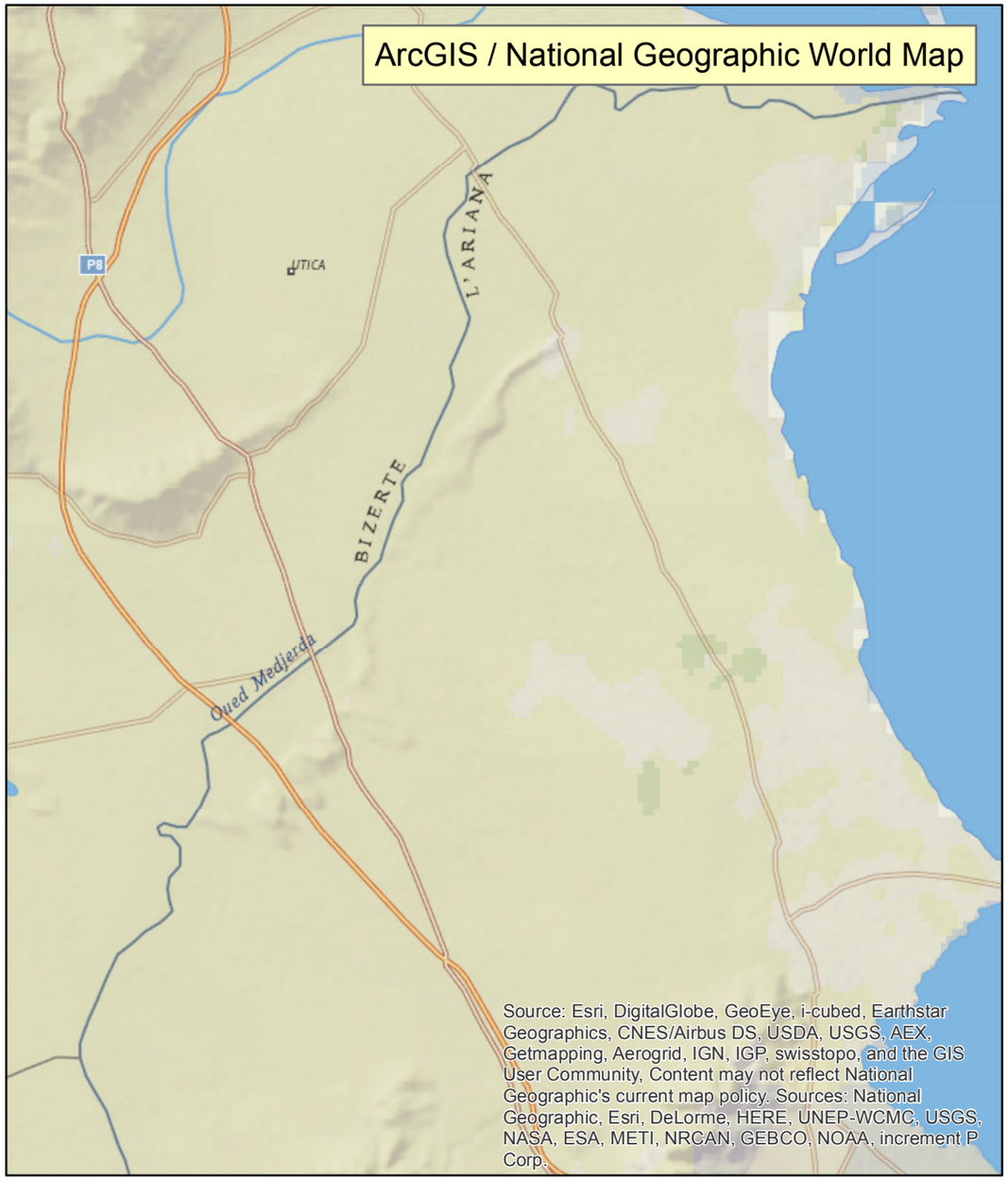
Example: Lower Bouregreg, Morocco (w/ GLC30 Water)



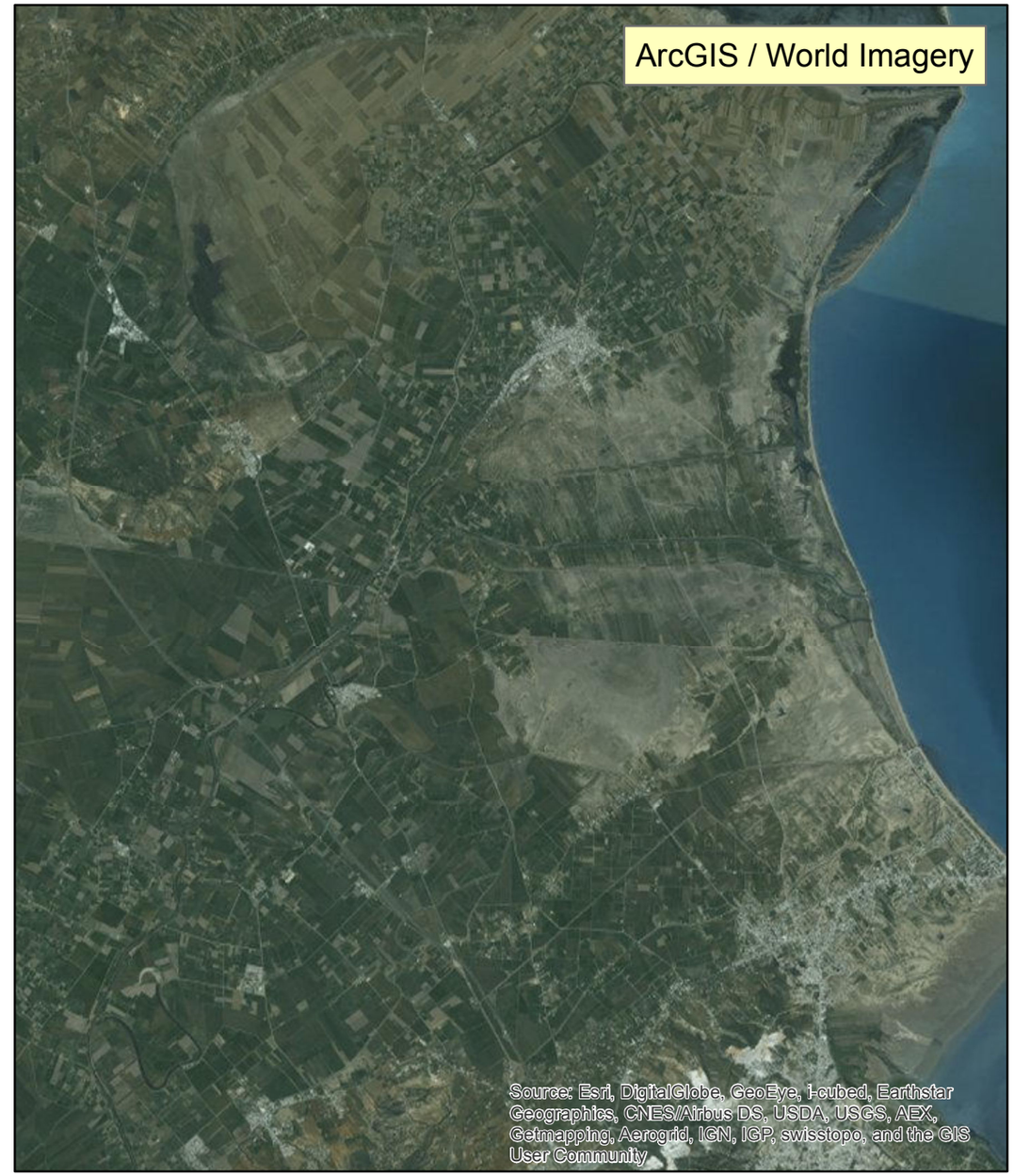
0 4 8 Kilometers

GLC30 Water Bodies Layer

Example: Medjerda River, Tunisia (w/o GLC30 Water)

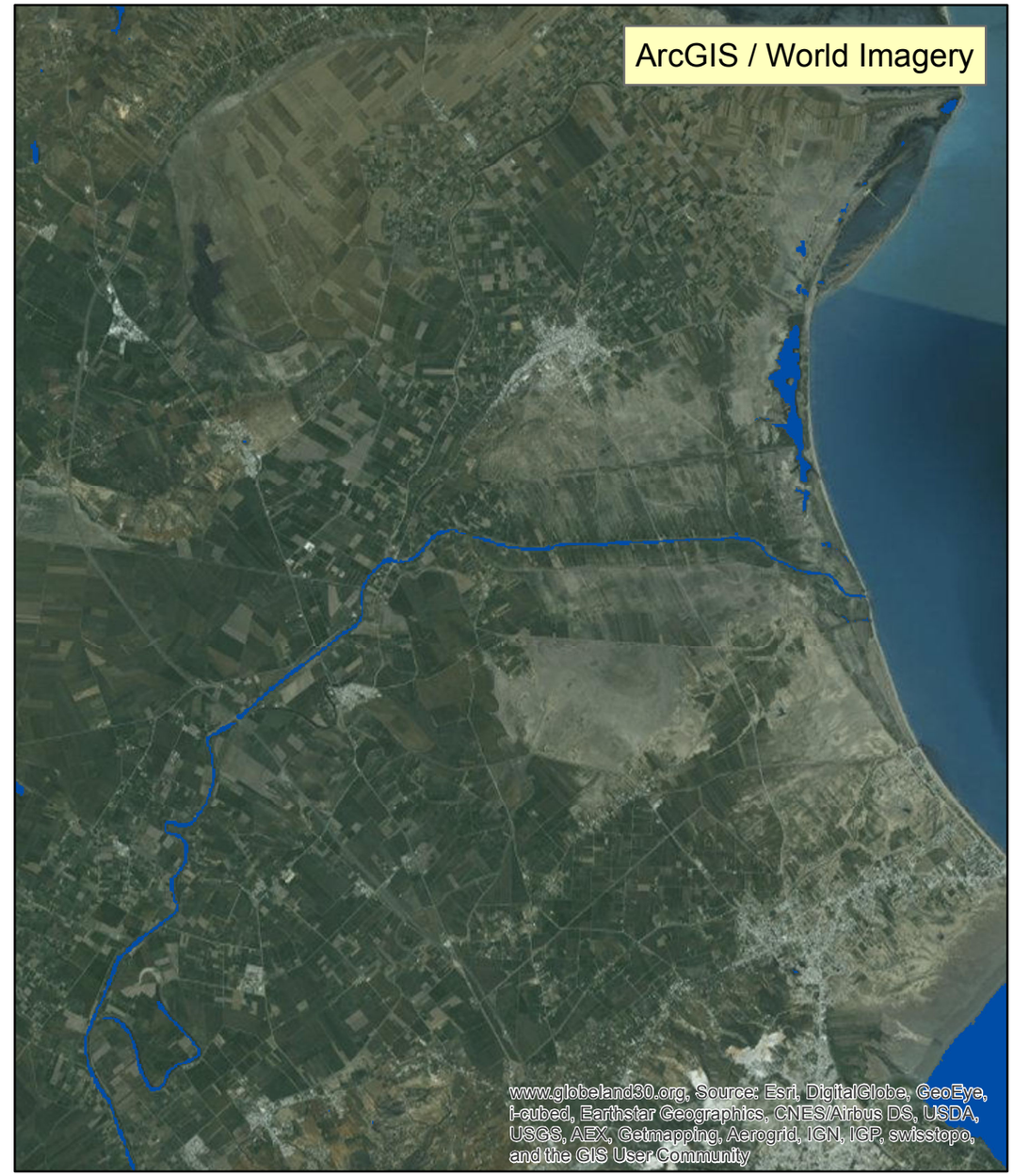


0 7 14 Kilometers



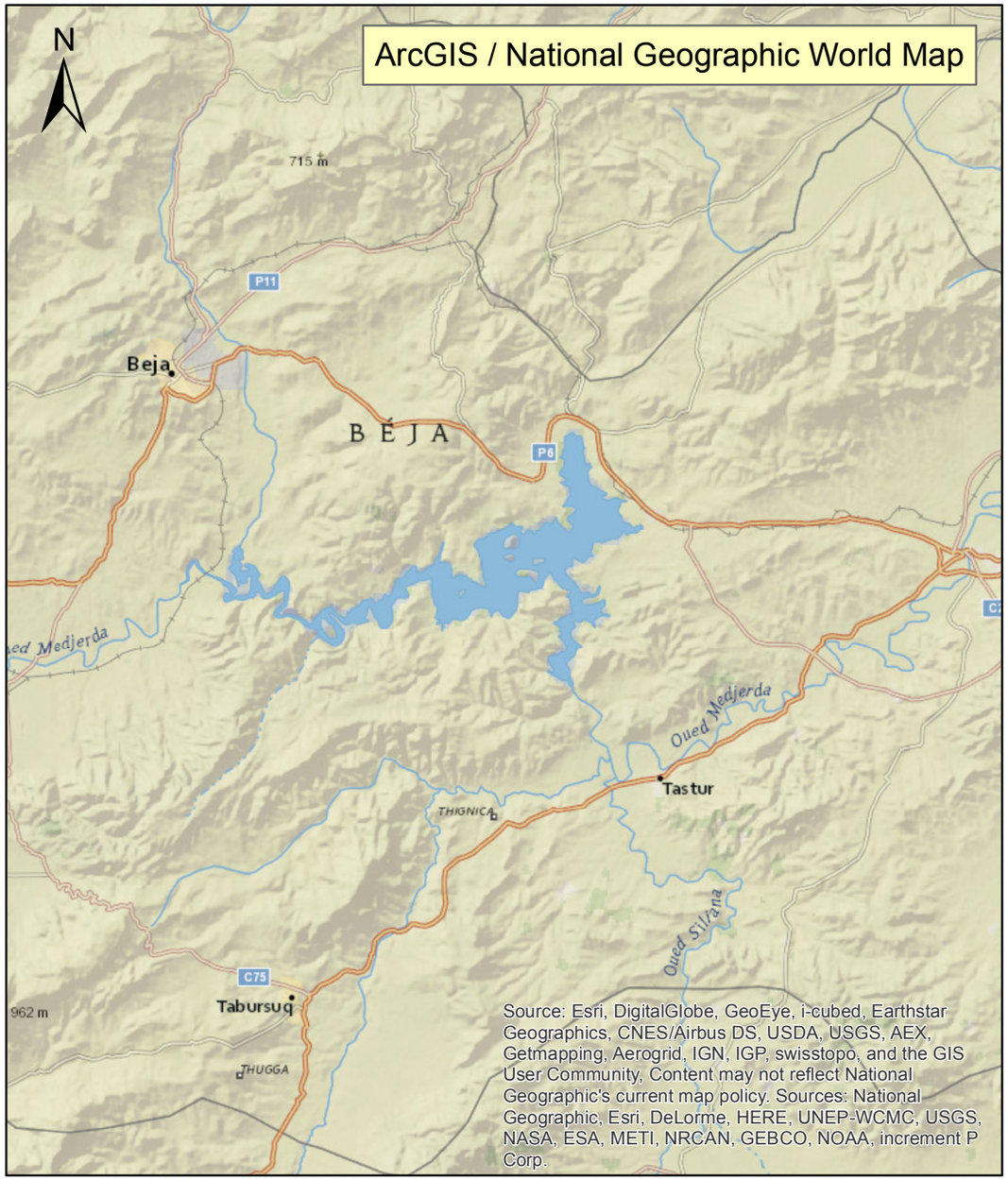
Example: Medjerda River, Tunisia (w/ GLC30 Water)

0 7 14 Kilometers

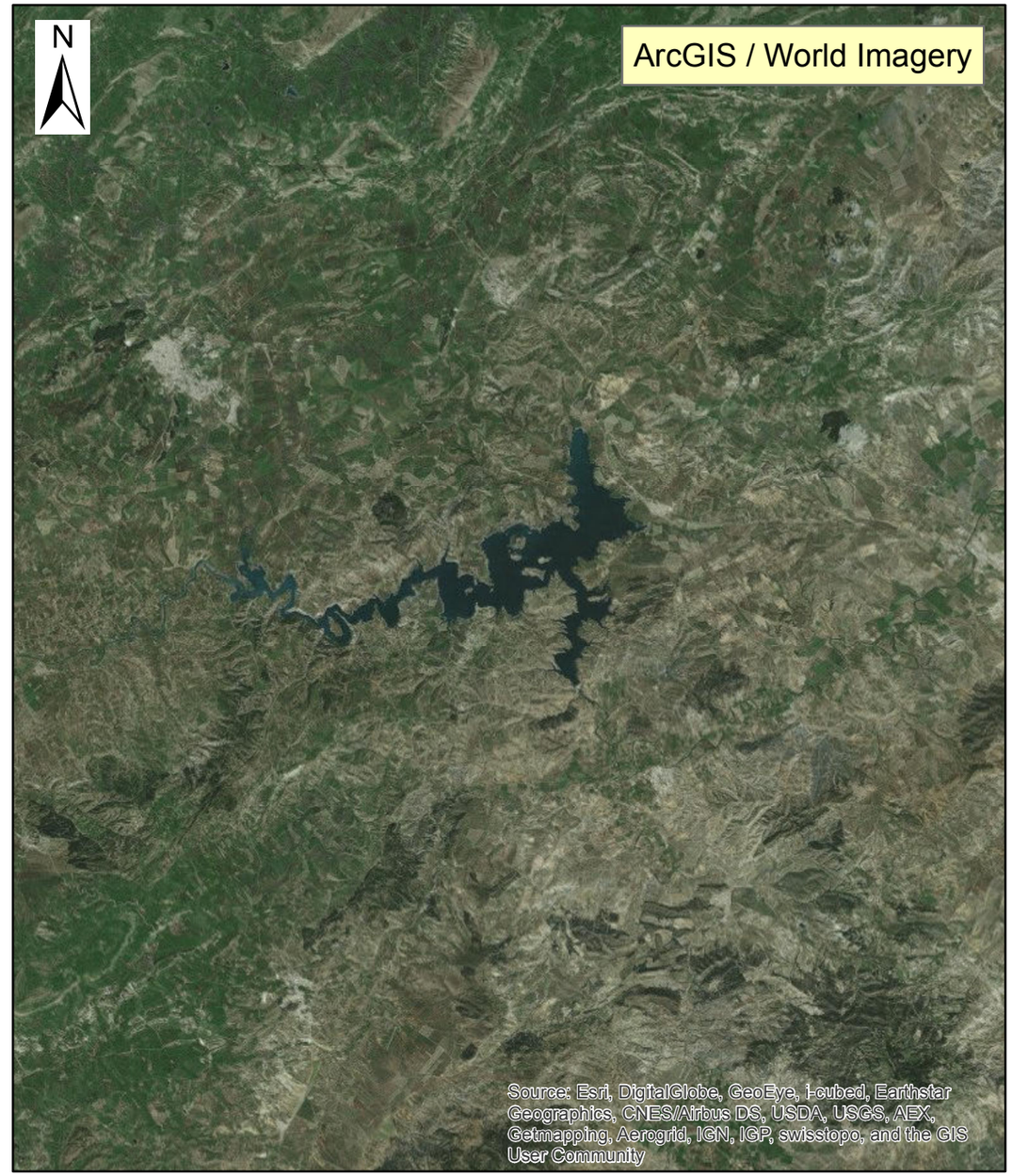


GLC30 Water Bodies Layer

Example: Medjerda, near Barrage Sidi Salem (w/o GLC30 Water)



0 10 20 Kilometers



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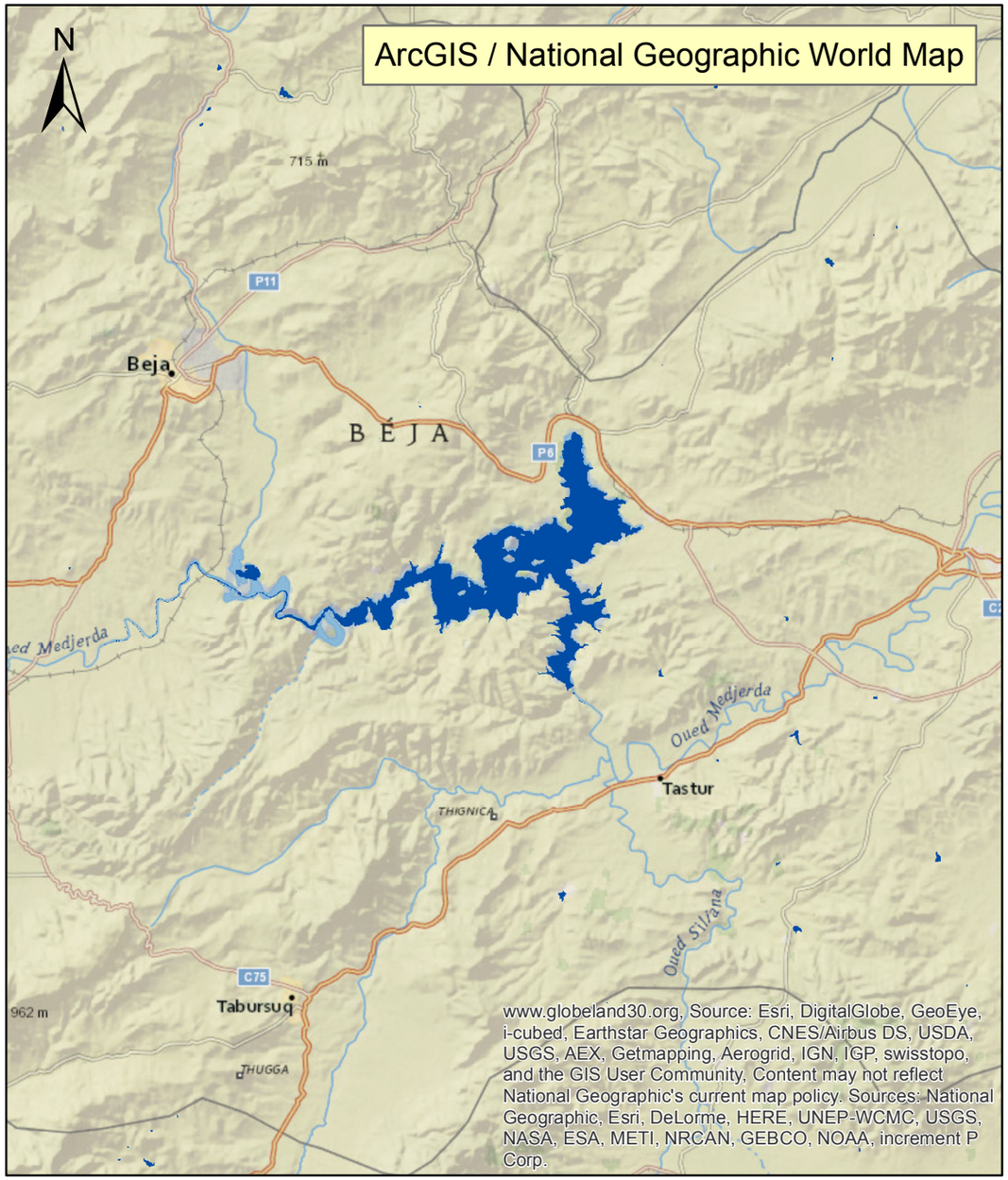

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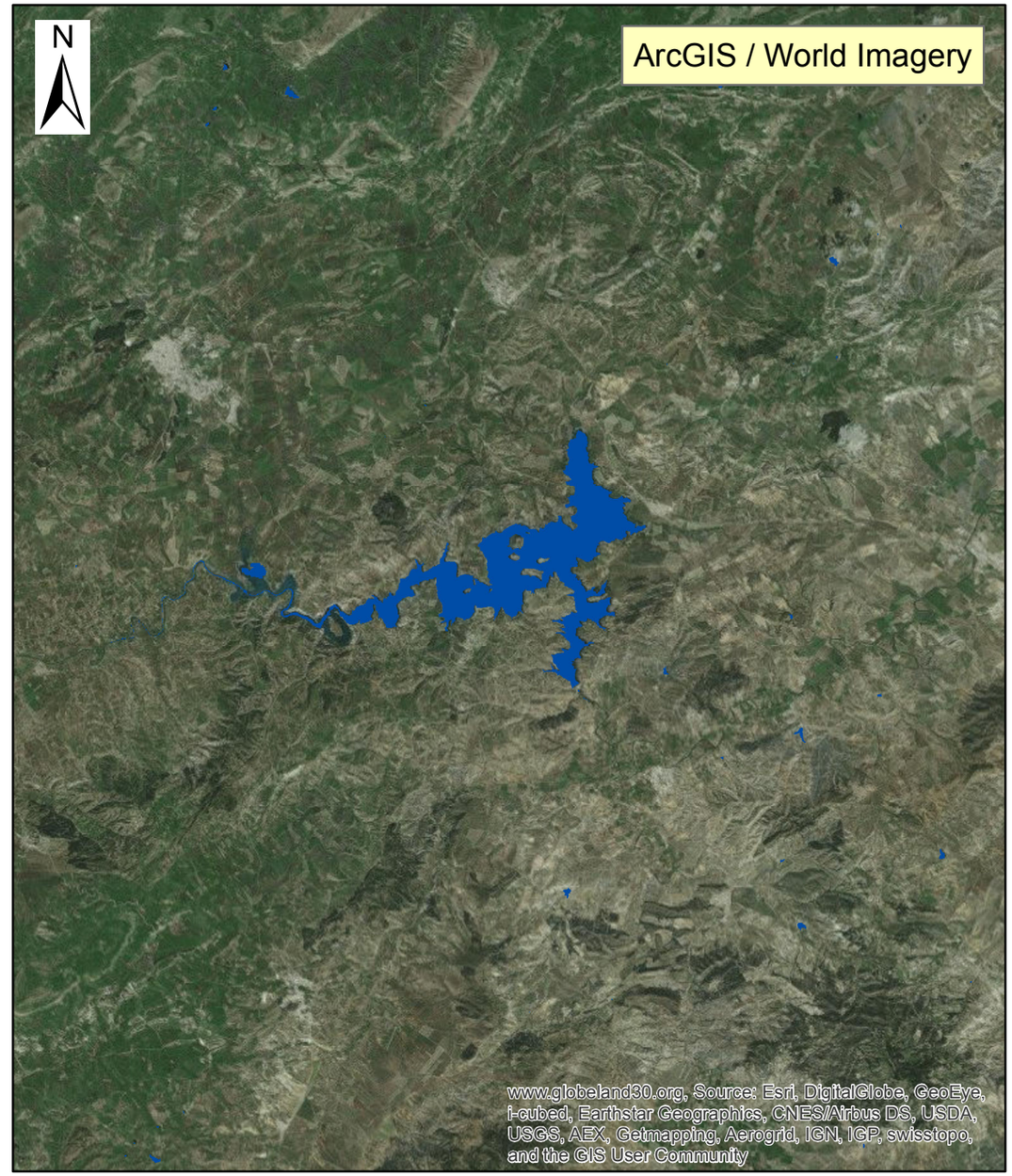

GLC30 Water Bodies

For large rivers in other regions, GlobeLand30 represents water with relatively high accuracy across all land cover types.

Land Cover	Country	Water Body	GWD-LR Channel Width (m)	Evaluation
Wetlands	United States	Mobile/Tensaw river system	210	Near Perfect
Artificial Surfaces	United Kingdom	River Thames	600	Near Perfect
Wetlands	Cambodia	Tonle Sap	25000	Near Perfect
Cultivated	Vietnam	Mekong River Delta	1300	Excellent
Wetlands/ Shrublands	Canada	Quill Lakes	7600	Good*
Forest	Brazil	Rio Tapajos	13000	Near Perfect
Forest	United States	Chattahoochee River	TS	Excellent
Wetlands/ Shrublands	United States/ Mexico	Rio Grande	TS	Good
Shrublands	United States	Colorado River	183	Near Perfect
Cultivated	Poland	Vistula River	320	Excellent
Artificial Surfaces	France	Seine	TS	Excellent

TS = Too small to appear in GWD-LR (less than 183 m in width)

* GlobeLand30 shows more water than reference maps