

**“SRTM-DEM ACCURACY**  
**ASSESSMENT ON PAMPA REGION,**  
**ARGENTINA”**

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**Shuttle  
RADAR  
Topographic  
Mission**

International Cooperation  
(USA-Germany and Italy)

**“World Wide  
Topographic Map  
(DEM)”**

**(80% of the Earth)**

<http://www2.dlr.de/oeffentlichkeit/specials/sonderseiten/srtm>

**RADAR BANDS** C and X-SAR **Interferometric Mode.**

(2 receiver antennas separated by 60 m)

**Data Collected** during 11 days on **February 2000** .

**Data Points Spaced** 1 arc second Lat and Long (about 30 m)

**DEM Processing:** German Aerospace Center.

# SRTM- Digital Terrain Height Maps

## General Specifications

	SRTM X-SAR	SRTM SIR-C	SRTM SIR-C
	<b>Level 2</b>		<b>Level 1</b>
<b>Horiz. Datum</b>	<b>WSG 84</b>		
<b>Vertical Datum</b>	<b>WSG 84 ellipsoid</b>		
<b>Physical Units</b>	<b>meters</b>		
<b>Spatial Resolution</b>	<b>30 x 30 m</b>	<b>90x90 m</b>	
<b>Horiz. Accuracy</b>	<b>&lt; 20 meters</b>	<b>&lt; 60 meters</b>	
<b>Vertic. Accuracy</b>	<b>&lt;16 meters</b>		
<b>Image Data Volume</b>	<b>~ 4 Mbytes</b>	<b>~550 bytes</b>	
<b>Block Definition</b>	<b>15' raster Lat and Long</b>		

# OBJECTIVES

- Analysis of the SRTM DEM accuracy on flat Areas.
- Comparison of SRTM DEM with topographic maps and Terrain DEMs at 4 scales: 1:250,000; 100,000; 50,000; 5,000, in order to **IDENTIFY the More Suitable scale of Application.**
- Analysis of the performance of SRTM DEM for hydrologic modeling: watershed and streams delineation, runoff, erosion and NPS Pollution).
- Assessment of potential use in the improvement of existing Soil Survey.

# STUDY AREA

**-ARGENTINA -**

**WEST OF BUENOS  
AIRES  
PROVINCE**



Latitude: S 34° to 35°

Longitude: W 61°30' to 63°



# WHY ARGENTINA?

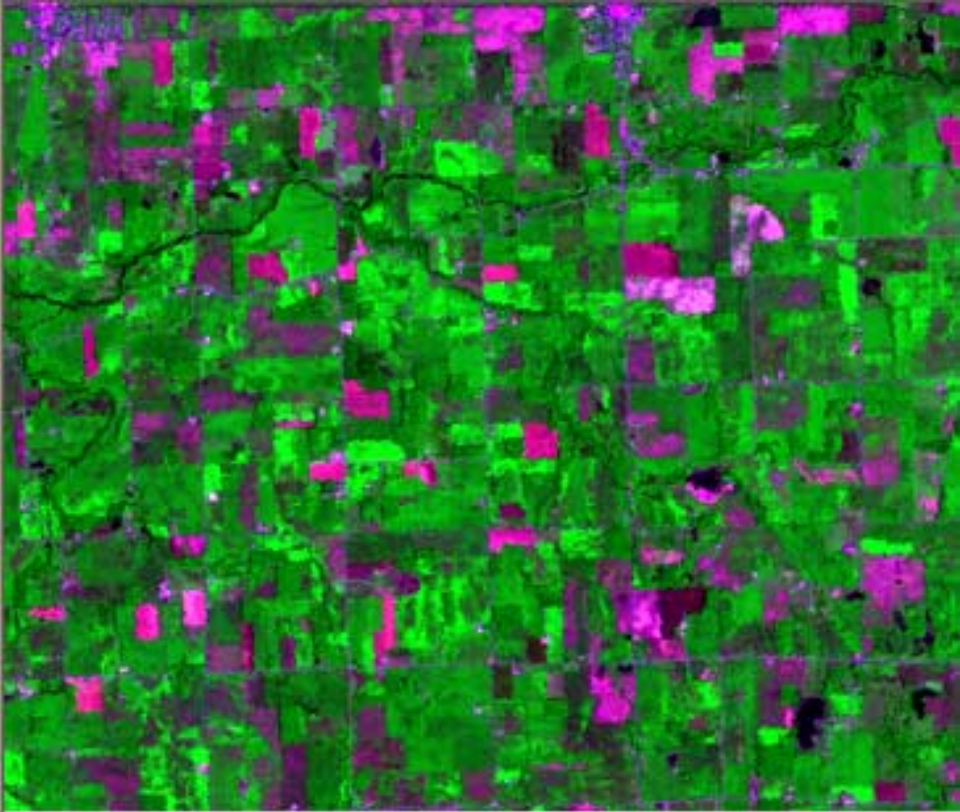
- General Relief is Flatter than Midwest USA.
- Less “Noise” for Radar DEM:
  - The average Field Size is higher than Indiana (range between 100 acres to 300 acres)
  - Forest Patches are smaller and sparse.
  - Fewer Farm buildings.
- “Easier” filtering of elevation distortions.

EXAMPLE:

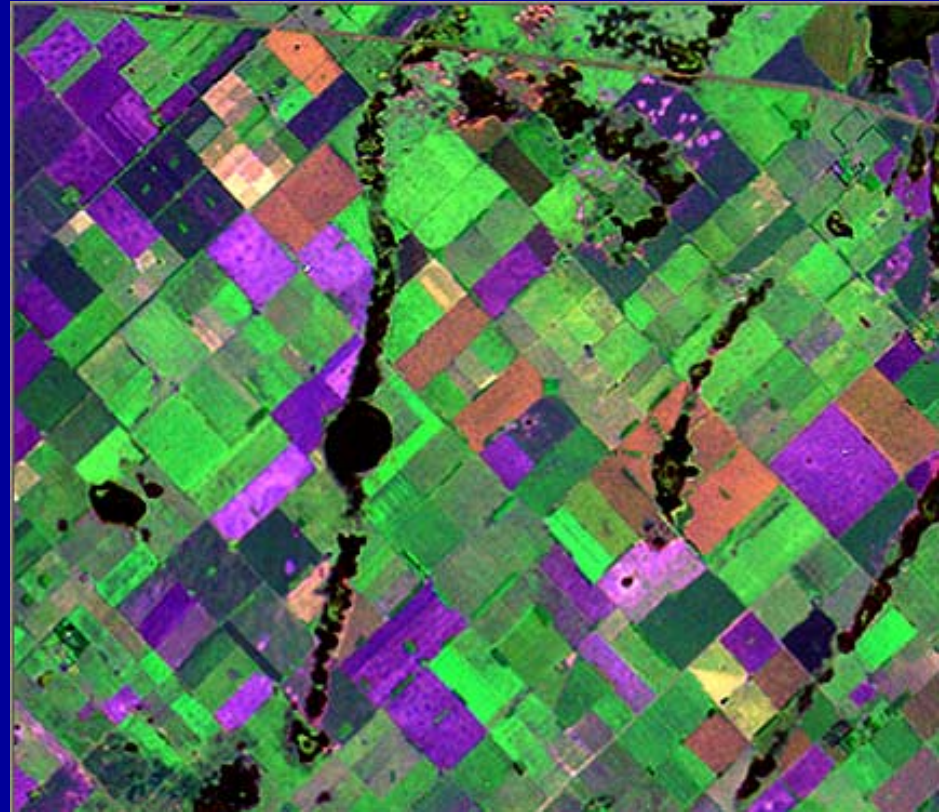




# FIELD SIZE COMPARISON



EAST CENTRAL INDIANA  
10,000 Hectares



WEST BUENOS AIRES  
10,000 Hectares

# Geographic Data

- **Topographic Maps made by IGM (Military Geographic Institute- Argentina) at 1:250,000 . 1:100,000 . 1:50,000 .**
- **Field Survey: 840 elevation points – Laser Total Station- Scale approx: 1:13,000**

## DEM Quality Evaluation

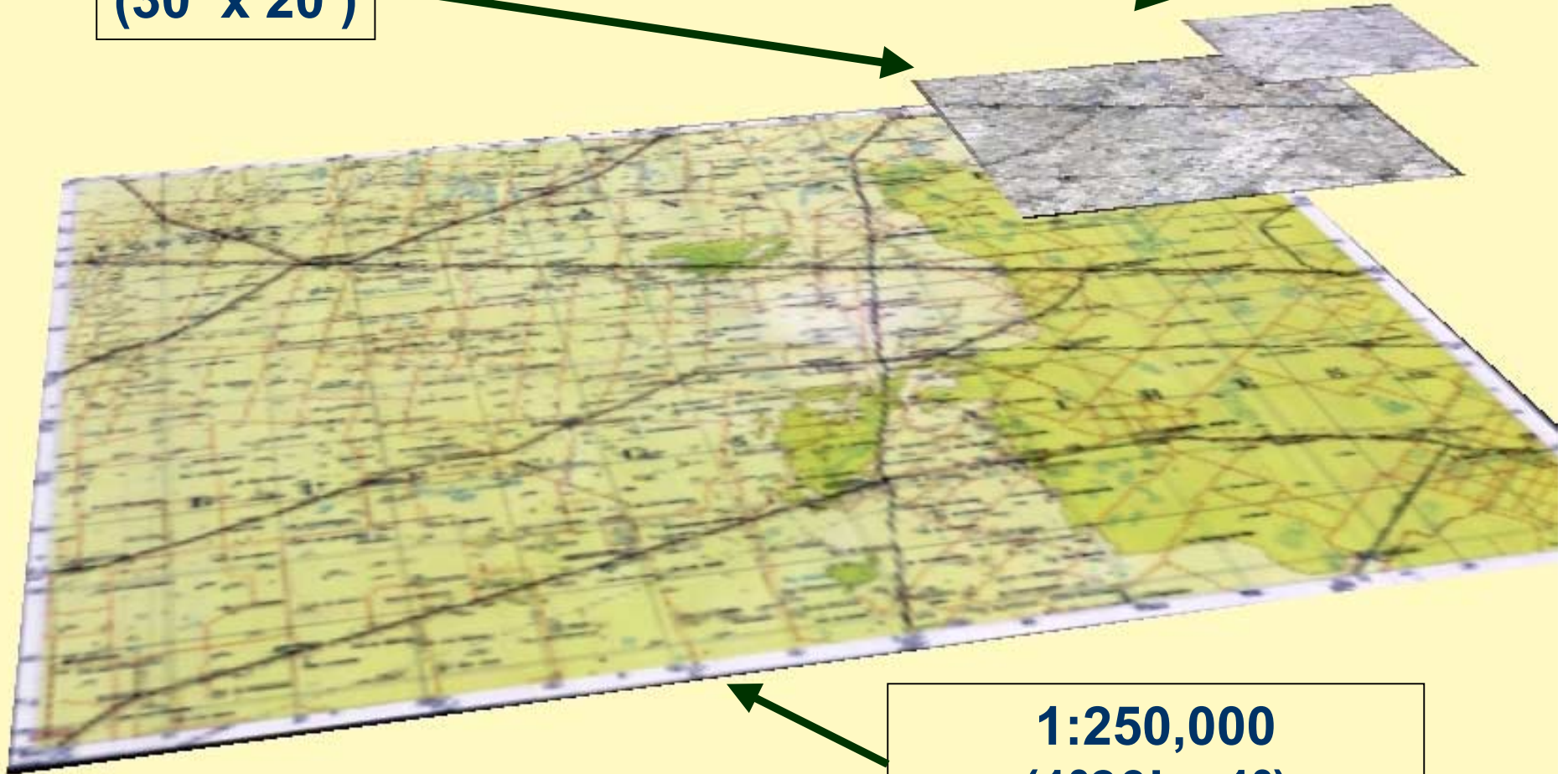
- **USGS STANDARDS.**



**1:100,000  
(30' x 20')**

**1:50,000  
(15' x 10')**

**1:13,000  
(5.2' x 3.3' )**



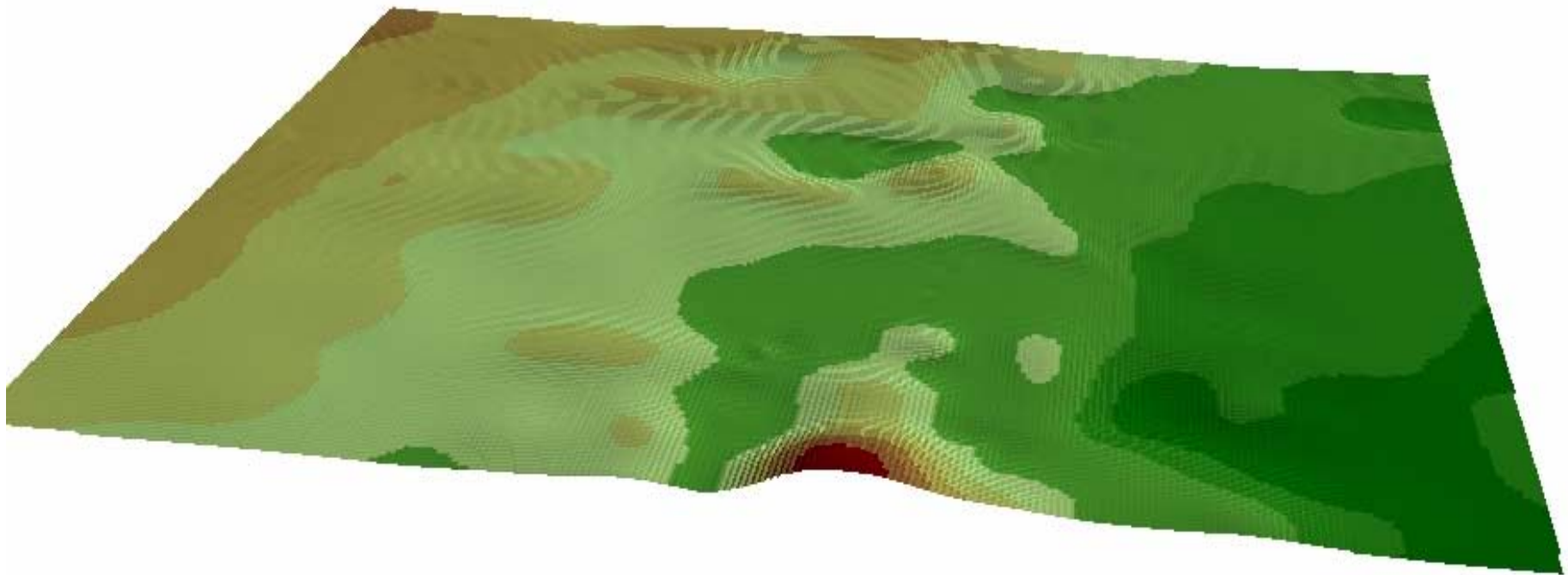
**1:250,000  
(1°30' x 1°)**

# State of the project

- We are in the first part of the Project:
  - Digitizing Contours and elevation points from Topographic maps (1:250,000 and 1:13,000 are done) from Argentina.
  - Digitizing Water bodies and Streams.
  - Generating Terrain DEMs from digitized data and Dealing with interpolation methods.
- We expect to received SRTM data during the next weeks.

**“VEDIA”**  
**Scale 1:250,000**

**Average Slope: 0.10 %**  
**Min Elevation: 87.0 m**  
**Max Elevation: 129.6 m**



**Vertical Exaggeration Factor : 50**  
**Interpolation Method: SPLINE**

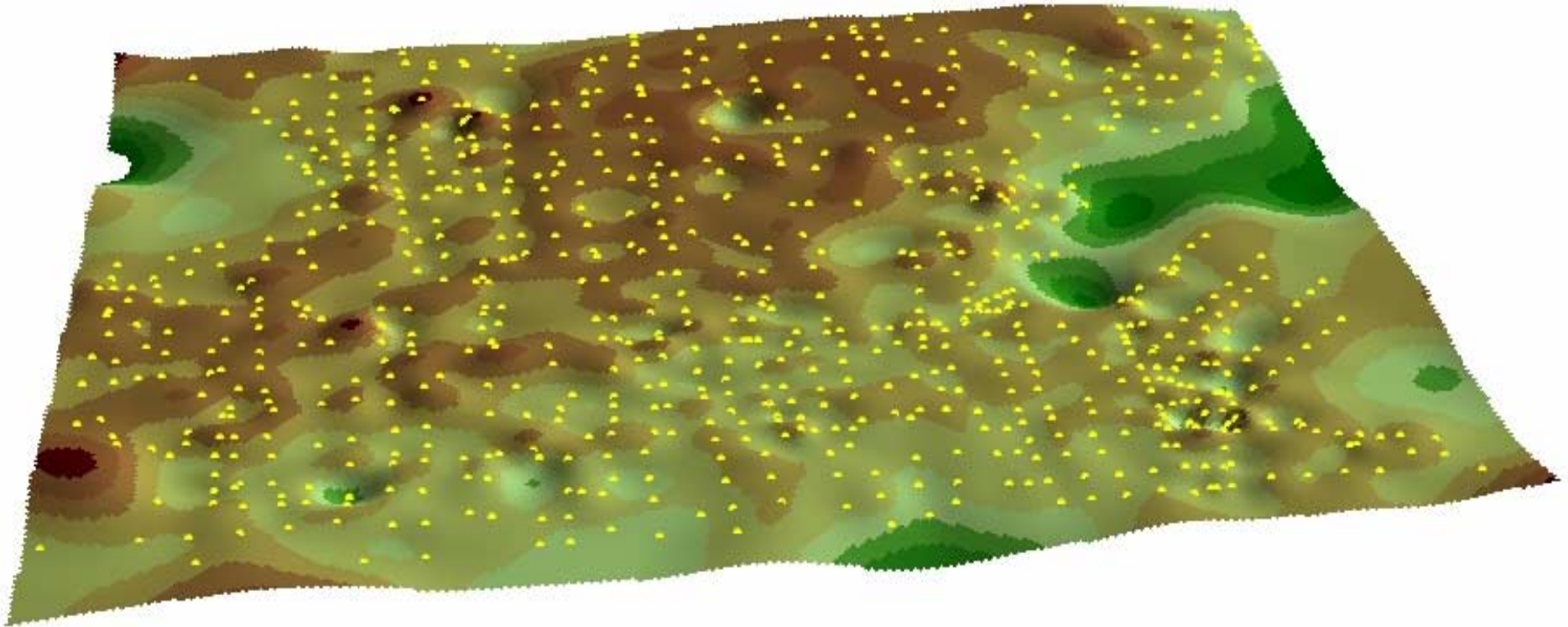
**“ESTANCIA SAN PEDRO”**

**Scale 1:5,000  
4000 hectares**

**Average Slope: 0.60 %**

**Min Elevation: 87.18 m**

**Max Elevation: 93.36 m**



**Vertical Exaggeration Factor : 15**

**Interpolation Method: SPLINE**

**TO BE  
CONTINUED**