

Global Irrigated Area Map (GIAM)

Accuracy Assessment

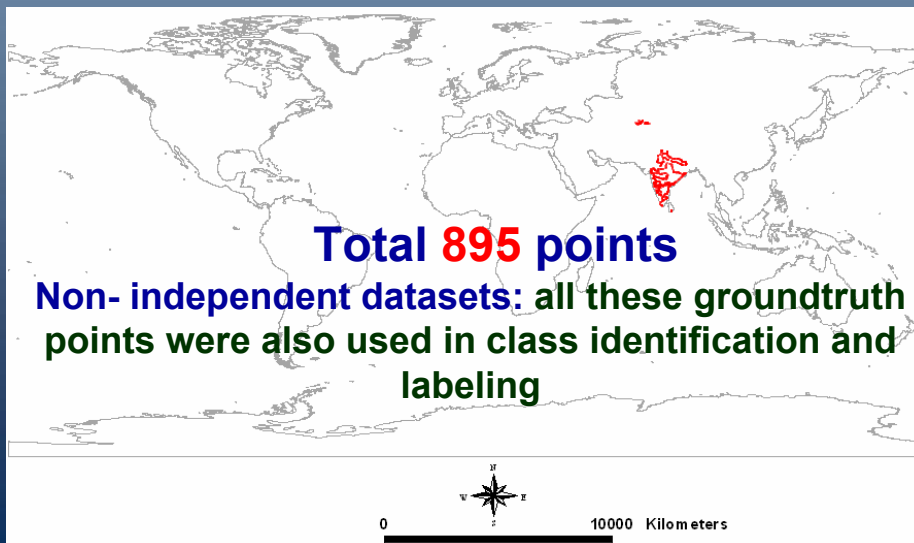
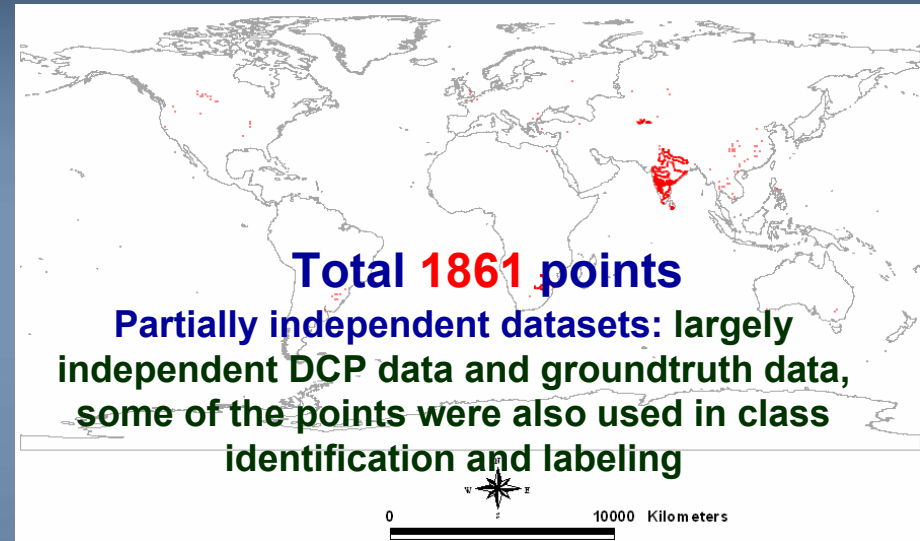
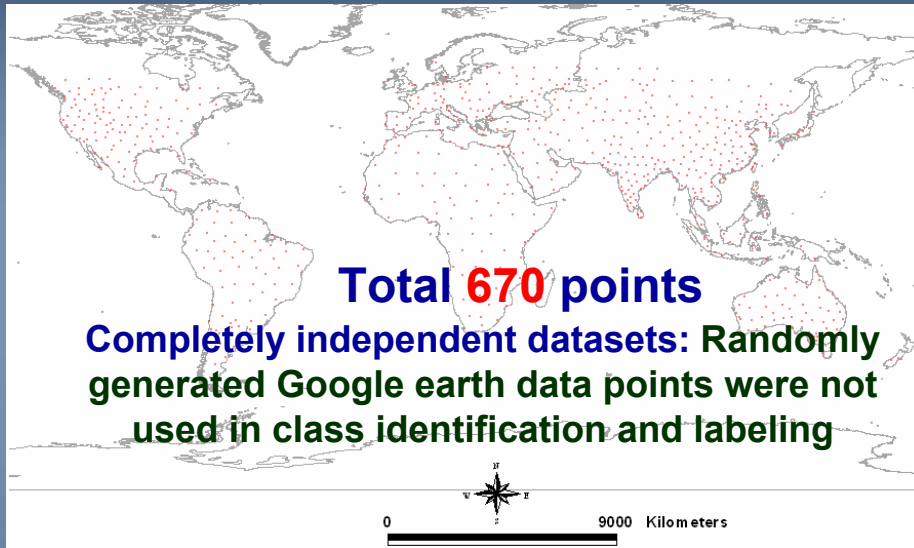
Accuracies and Errors

Day 3: September 27, 2006
Interactive Session

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Accuracy assessment

Three Datasets used in Accuracy Assessment

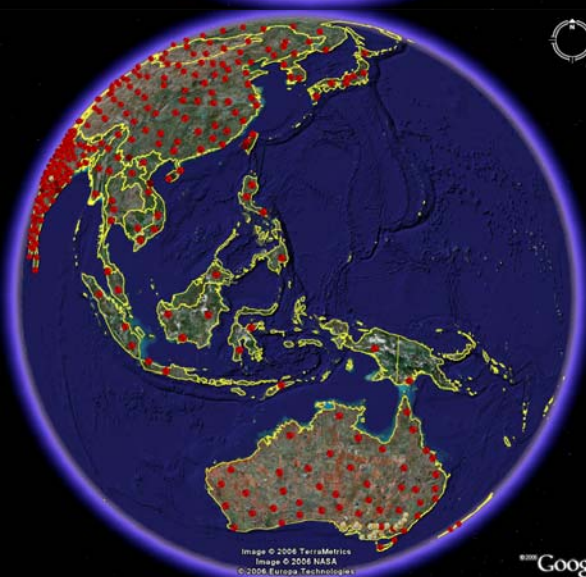
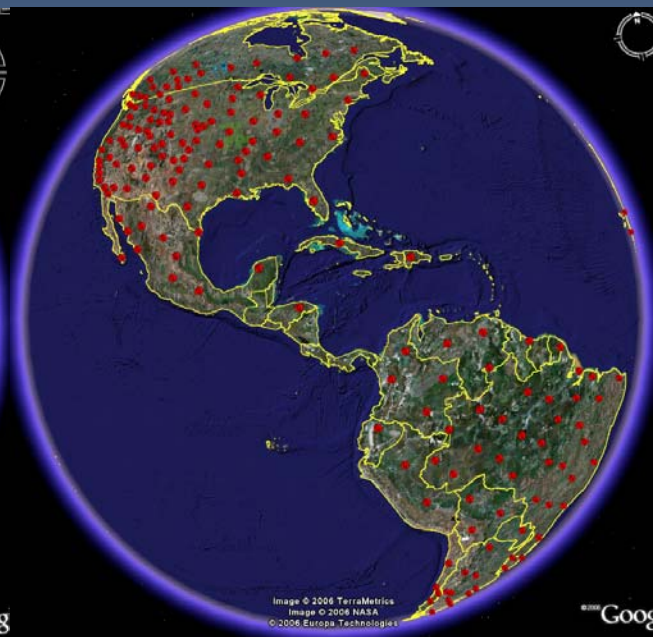
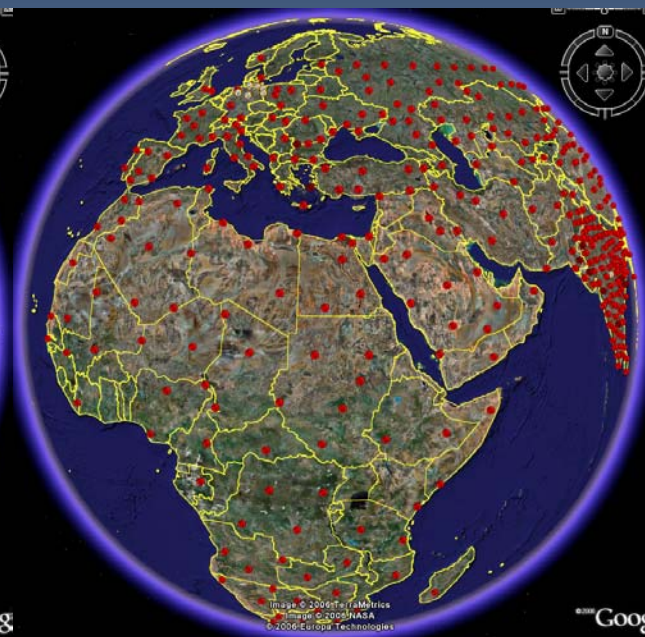


Legend

- Ground Truth points
- Continent boundary

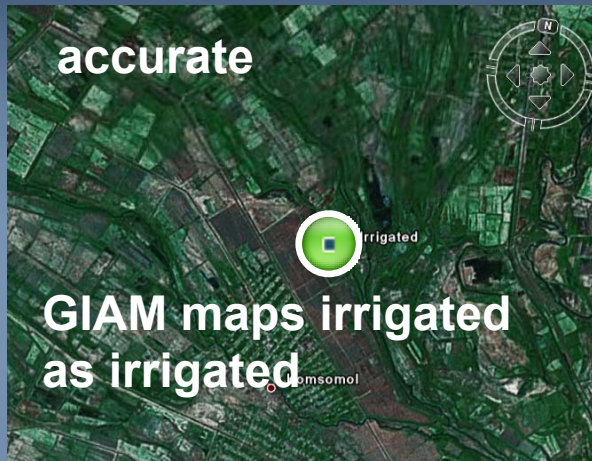
GIAM Accuracy Estimation

670 Randomly Generated Google Earth “Ground-truth” Data Points

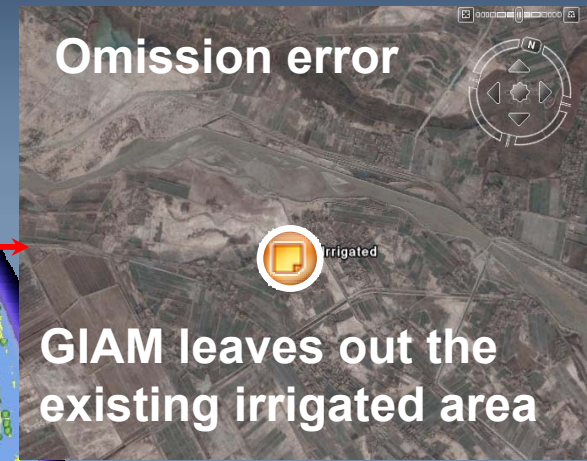


Total 670 Independent “Google Earth GT points” were generated for accuracy assessment. These points are not used for class identification and labeling process.

GIAM Accuracy Estimation using Google Earth Ground Truth (GEGT) Points

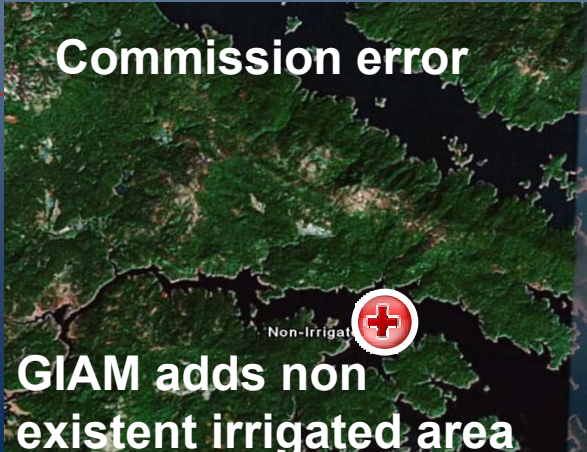
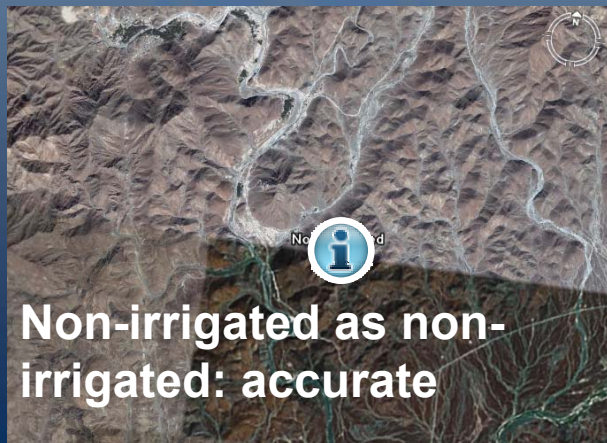


Irrigated (GEGT) as Irrigated (GIAM)







Irrigated (GEGT) as non-Irrigated (GIAM)

GIAM Non Irrigated as Non Irrigated (GE)



Non-irrigated (GEGT) as Irrigated (GIAM)

-  Irrigated (GEGT) as Irrigated (GIAM)
-  Irrigated (GEGT) as non-Irrigated (GIAM)
-  Non-irrigated (GEGT) as Irrigated (GIAM)
-  Non Irrigated (GEGT) as non-Irrigated (GIAM)

Accuracy and Error Matrix

Irrigated areas of the GIAM map crossed with 3 independent datasets

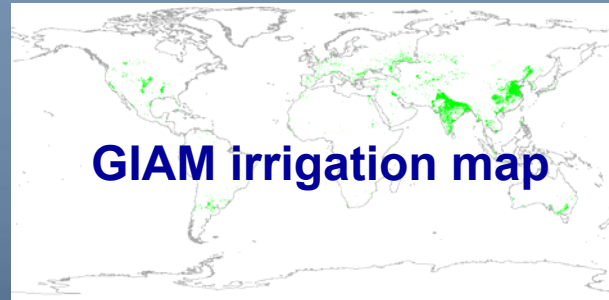
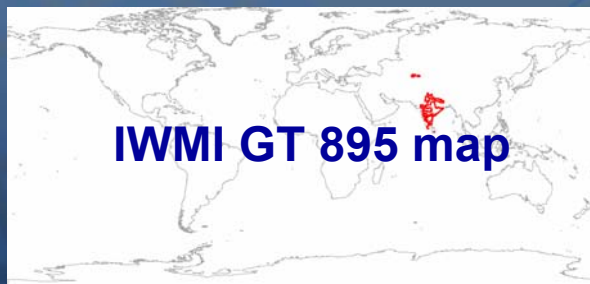
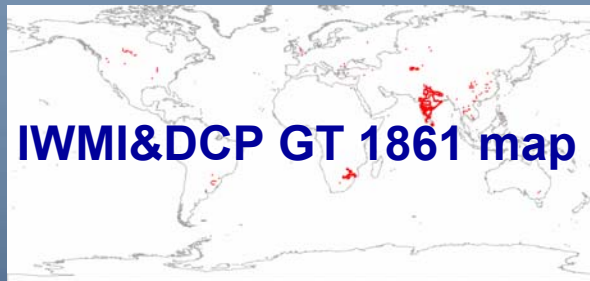
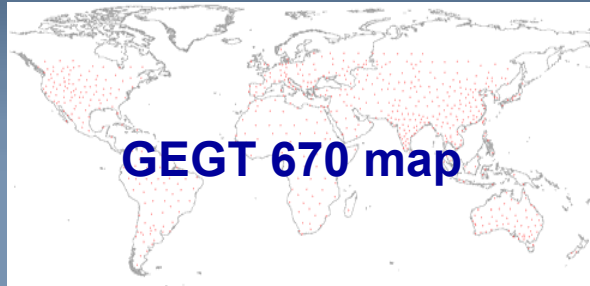


Table 1

- Accuracy
- Omission Error
- Commission Error

Table 2

- Accuracy
- Omission Error
- Commission Error

Table 3

- Accuracy
- Omission Error
- Commission Error

Accuracy assessment

Accuracy and error matrices

1. using Google Earth 670 GT points¹

Irrigated as Irrigated = 295 points^A
Irrigated as Non-irrigated = 28 points^B
Non-irrigated as irrigated = 61 points^C
Non-irrigated as Non-irrigated = 286 points
Accuracy of irrigated class **91%**

2. using IWMI/DCP 1861 GT Points²

Irrigated as Irrigated = 726 points
Irrigated as Non-irrigated = 219 points
Non-irrigated as irrigated = 215 points
Non-irrigated as Non-irrigated = 701 points
Accuracy of irrigated class **77%**

3. using IWMI 895 GT Points³

Irrigated as Irrigated = 466 points
Irrigated as Non-irrigated = 86 points
Non-irrigated as irrigated = 122 points
Non-irrigated as Non-irrigated = 221 points
Accuracy of irrigated class **84%**

1. GEGT points were randomly generated and hence are completely independent. These points were not used in class identification and labeling.
2. GT data collected by IWMI and DCP. Most of the points from DCP used in accuracy assessment were not used in class identification and labeling process. So this is partially independent dataset.
3. GT collected by IWMI. The same data that was used for class identification and labeling was also used in accuracy assessment. Thereby, this is not independent datasets.

A = accuracy = $(295)/(295+28) = 91\%$

B = Omission error = $(28)/(295+28) = 9\%$

C = Commission error = $(61)/(295+28) = 17\%$

Accuracy and Error of GIAM 10 km V2.0 Map

Completely Independent Data from randomly Generated Google Earth Points

Level of accuracy assessment	Total Ground truth Sample size of Irrigated and non-irrigated areas (number)	Total Ground Truth Sample size of Irrigated areas (number)	Accuracy of Irrigated area Classes (Irrigated GT points falling on Irrigated areas) (percent)	Errors of Omission (Irrigated GT points falling on non-irrigated) (percent)	Errors of Commission (non-irrigated GT points falling on irrigated) (percent)
I. Global map accuracy and errors					
1. GIAM	670 ^a	321 ^b	91	9	17
II. India portion accuracy and errors					
3. GIAM for Indi	83 ^c	55 ^d	87	13	11

Note:

a = Google earth ground truth (GEGT) data points of the World for irrigated and non-irrigated areas collected by IWMI.

aa = GEGT data points of the World for irrigated and non-irrigated areas collected by IWMI .

b = GEGT data points of the World for the irrigated areas collected by IWMI.

bb = GEGT data points of the World for the irrigated areas collected by IWMI.

c = GEGT data points of India for irrigated and non-irrigated areas collected by IWMI.

Accuracy and Errors of GIAM 10 km V2.0 Map

1861 point dataset (DCP + GT): partially independent (most of DCP data was not used in class identification and labeling; however, GT data was the same as the one used in class identification and labeling)

895 point dataset (GT): not independent (same GT data used in class identification and labeling)

Level of accuracy assessment	Total Ground truth Sample size of Irrigated and non-irrigated areas (number)	Total Ground Truth Sample size of Irrigated areas (number)	Accuracy of Irrigated area Classes (Irrigated GT points falling on Irrigated areas) (percent)	Errors of Omission (Irrigated GT points falling on non-irrigated) (percent)	Errors of Commission (non-irrigated GT points falling on irrigated) (percent)
I. Global map accuracy and errors					
1. GIAM	895 ^a	466 ^b	84	16	21
	1861 ^{aa}	726 ^{bb}	77	23	23
II. India portion accuracy and errors					
3. GIAM for Indi	1041 ^c	568 ^d	86	14	20

Note:

a = ground truth (GT) data points of the World for irrigated and non-irrigated areas collected by IWMI.

aa = GT data points of the World for irrigated and non-irrigated areas collected by IWMI and from the degree confluence project

b = GT data points of the World for the irrigated areas collected by IWMI.

bb = GT data points of the World for the irrigated areas collected by IWMI and DCP.

c = GT data points of India for irrigated and non-irrigated areas collected by IWMI.

Illustrations follow

