

## NAMMA Rain Gauge Network Senegal, West Africa

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2005-2006

### Rain Gauge Network:

#### *Large-Scale Rain Gauge Network*

The large scale rain gauge network was deployed to provide adequate spatial coverage centered on the NPOL site. There are a total of 18 sites located in the rain large-scale network. Two gauges (AMMA 22 and 23) are co-located at NPOL to provide coincident measurements with each other and Larry Bliven's Rain Imaging System (RIS). The rain gauge locations of the deployed gauges (with the exception of AMMA22 and AMMA23, which are located at NPOL) are shown in Fig. 1. Distances between rain gauges and the NPOL site range between about 5 km and 75 km. Details about deployed rain gauges and photos of the each site are given below.

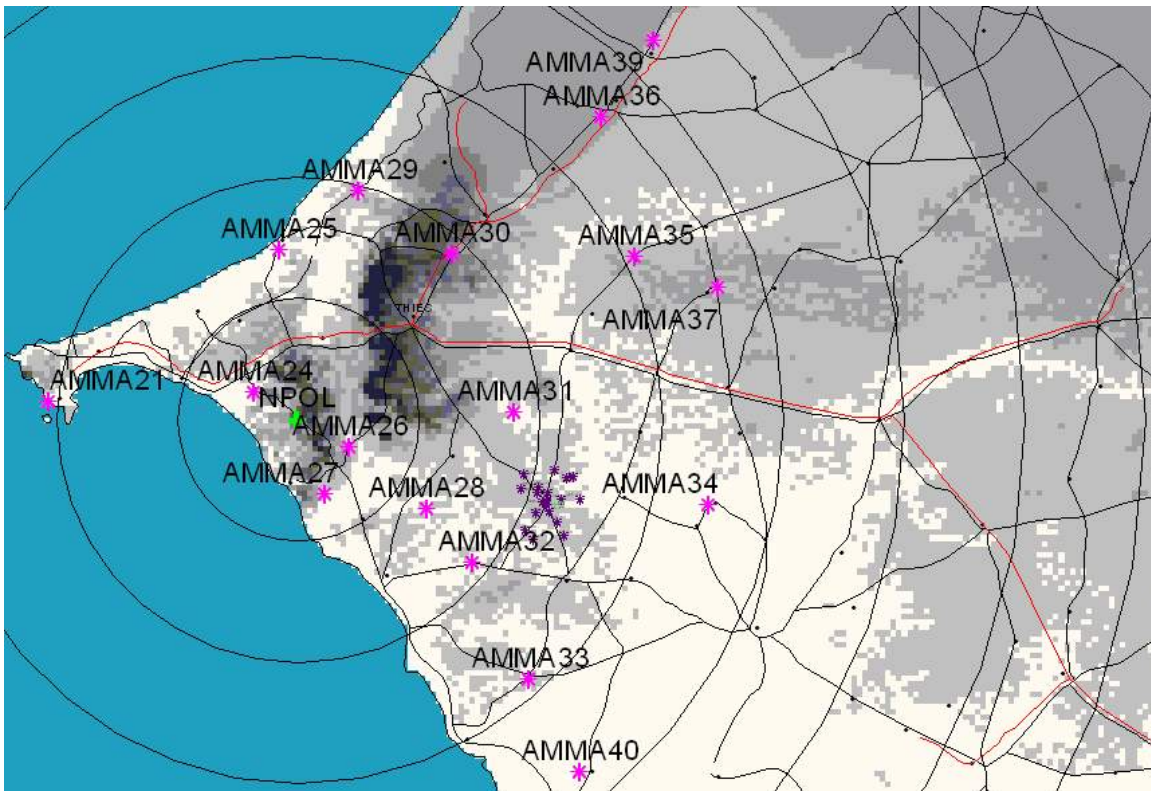


Figure 1: Large scale rain gauge network. The proposed NPOL site is shown with a green plus symbol. The concentric rings indicate range rings in 20 km intervals from NPOL. The deployed large scale rain gauge network is indicated by the light magenta stars and associated site name. The sited dense gauge network is indicated by the purple stars (see Fig. 19 for a zoomed view of the network).

*Large-Scale Rain Gauge Sites:*

Site: AMMA21

Location: 14.68255°, -17.46703°

Village: UCAD – Dakar

Notes: Good site, located in a secure location inside university property. Gauge and logger checked out fine.

Gauge information: S/N: 3029 (HUWAL15)

Logger information: S/N: 707865

Date Deployed: 15 June 2005



Figure 2: AMMA21 rain gauge site.



Site: AMMA22

Location: 14.65654°, -17.09803°

Village: Kawsara

Notes: Placed next to NPOL and RIS for intercomparison studies (Hydrologic Gauge)

Gauge information: S/N: 05-400

Logger information: 682967

Date Deployed: 18 August 2006

Site: AMMA23

Location: 14.65654°, -17.09803°

Village: Kawsara

Notes: Placed next to NPOL and RIS for intercomparison studies (Qualimetrics Gauge)

Gauge information: S/N: 3027 (HUWAL04)

Logger information: S/N: 682972

Date Deployed: 18 August 2006



Figure 3: AMMA 22 and 23 rain gauge sites.

Site: AMMA24

Location: 14.69522°, -17.16153°

Village: Mbounka-Bambora

Notes: Good location in secured area. It will need a fence to keep animals away. Gauge and logger checked out fine.

Gauge information: S/N: 3012 (HUWAL11)

Logger information: S/N: 682966

Date Deployed: 10 June 2005



Figure 4: AMMA24 rain gauge site.

Site: AMMA25

Location: 14.90502°, -17.12458°

Village: Kayar

Notes: Site seems close to the main road, gauge and logger check out fine

Gauge information: S/N: 3008 (HUWAL12)

Logger information: S/N: 682973

Date Deployed: 27 June 2005 (Amadou and Samo)



Figure 5: AMMA25 rain gauge site.



Site: AMMA26

Location: 14.61389°, -17.02044°

Village: Bandia Bambora

Notes: Good site, installed in garden area of village. It will need a fence to keep animals away. Gauge and logger checked out fine.

Gauge information: S/N: 3026 (HUWAL03)

Logger information: S/N: 682970

Date Deployed: 10 June 2005



Figure 6: AMMA26 rain gauge site.

Site: AMMA27

Location: 14.54433°, -17.05721°

Village: Sorokhassap

Notes: A fence will need to be installed around gauge. Gauge and logger check out fine.

This gauge had problems at Wallops. It will need to be checked carefully for data quality issues even with the gauge and logger checking out fine.

Gauge information: S/N: 3009 (HUWAL14)

Logger information: S/N: 707858

Date Deployed: 10 June 2005



Figure 7: AMMA27 rain gauge site.

Site: AMMA28

Location: 14.52234°, -16.90547°

Village: Keur Issa Diene

Notes: Gauge located back of village by wood pile. It will need a fence. The platform was not very stable and needs to be check after first download and maintenance. This was the gauge that had many problems at Wallops – so need to check and replace if necessary. Gauge is very corroded from being next to the breaker wall.

Gauge information: S/N: 3028 (HUWAL09)

Logger information: S/N: 682964 (Bad) replaced with: 725848

Date Deployed: 13 June 2005



Figure 8: AMMA28 rain gauge site.



Site: AMMA29

Location: 14.99308°, -17.00579°

Village: NottoGouya Diama

Notes: Placed in Garden, Are the nearby trees too close?

Gauge information: S/N: 3015

Logger information: S/N: 682967

Date Deployed: 27 June 2005 (Amadou and Samo deployed gauge)



Figure 9: AMMA29 rain gauge site.

Site: AMMA30

Location: 14.89849°, -16.86714°

Village: Ndiakhate-Ndiassane

Notes: First install. We had some issues with installing the pole. We a wood board instead of the metal pole driver. Site located in fenced area. Platform seemed wobbly after the install – need to check for stability. Gauge and logger checked out fine.

Gauge information: S/N: 3007 (HUWAL08)

Logger information: S/N: 682972

Date Deployed: 09 June 2005



Figure 10: AMMA30 rain gauge site.

Site: AMMA31

Location: 14.66521°, -16.77471°

Village: Mousnakh-Seko

Notes: Very remote, will need a 4-wheel drive, placed outside village to the E. A fence was put around to keep the animals out. Good site. Gauge and logger checked out fine.

Gauge information: S/N: 3016 (HUWAL10)

Logger information: S/N: 707859

Date Deployed: 11 June 2005



Figure 11: AMMA31 rain gauge site.



Site: AMMA32

Location: 14.44297°, -16.83701°

Village: Louly Ngogom

Notes: Good location in a Garden. It needs a fence, which was installed after we left (confirmed by driving by it later). Gauge and logger checked out fine.

Gauge information: S/N: 3025 (HUWAL13)

Logger information: S/N: 707857

Date Deployed: 12 June 2005



Figure 12: AMMA32 rain gauge site.

Site: AMMA33

Location: 14.26937°, -16.75301°

Village: Ngueniene-Ouloff

Notes: Very nice location in village chief main yard. Only concern is tree located to the east (bottom left picture). Gauge and logger are in good condition.

Gauge information: S/N: 2946 (HUWAL02)

Logger information: S/N: 682971

Date Deployed: 13 June 2005



Figure 13: AMMA33 rain gauge site.

Site: AMMA34

Location: 14.52818°, -16.48687°

Village: Poultok Diohine

Notes: Good site at field edge near village. It will need a fence around it to keep the pigs and other animals from running into it. Watch out for millet growing around gauge.

Gauge and logger checked out fine. Very remote and will take time to service, might need 4 wheel drive during wet season.

Gauge information: S/N: 3014 (HUWAL06)

Logger information: S/N: 707865

Date Deployed: 12 June 2005



Figure 14: AMMA34 rain gauge site.



Site: AMMA35

Location: 14.89482°, -16.59729°

Village: Keur Samba Kane

Notes: Gauge placed in village school yard. It is good location with the exception of blowing sand (sand drift near fence). Sand in bucket could be a problem. Gauge and logger checked out fine.

Gauge information: S/N: 3027 (HUWAL04)

Logger information: S/N: 725850

Date Deployed: 09 June 2005



Figure 15: AMMA35 rain gauge site.

Site: AMMA36

Location: 15.10233°, -16.64649°

Village: Ndoucouna

Notes: Gauge located in walled area of village home. The site looks good except lots of sand (blowing sand problem). The gauge platform seemed wobbly after install. Gauge and logger checked out fine.

Gauge information: S/N: 3013 (HUWAL07)

Logger information: S/N: 707864

Date Deployed: 09 June 2005



Figure 16: AMMA36 rain gauge site.

Site: AMMA37

Location: 14.85003°, -16.47371°

Village: Thiapp – Panathie

Notes: Good location. Installed inside the fenced area of the chief's second in command.

Gauge and logger checked out fine.

Gauge information: S/N: 3011 (HUWAL01)

Logger information: S/N: 707856

Date Deployed: 09 June 2005



Figure 17: AMMA37 rain gauge site.

Site: AMMA38

Location: We did not to deploy this gauge because of the difficulty of getting to the site.

Village:

Notes:

Gauge information: S/N: N/A

Logger information: S/N: N/A

Date Surveyed: N/A



Site: AMMA39

Location: 15.21682°, -16.56875°

Village: Mbediene

Notes: Excellent site. The gauge will be located inside school grounds near their garden. It looks very secure and well sited.

Gauge information: S/N: N/A

Logger information: S/N: N/A

Date Deployed: 08 August 2006



Figure 18: AMMA39 rain gauge site.

Site: AMMA40  
Location: 14.13169°, -16.67901°  
Village: Yayéme  
Notes: Very Dry in this location when we deployed.  
Gauge information: S/N: N/A  
Logger information: S/N: N/A  
Date Deployed: 09 August 2006



Figure 18: AMMA40 rain gauge site.

### *Dense-Scale Rain Gauge Network*

The dense-scale rain gauge network is centered on the village of: Diaganiao, The rain gauge AMMA20, which is indicated by the green site label, is the center of the network. The shortest distance between two rain gauge sites is about 200 m and the farthest distance is about 12 km. The locations of the dense-scale rain gauge network are shown in Fig. 17. There are 20 rain gauges in the dense-scale network. The rain gauges correspond to village locations. The details of each rain gauge site are described below.

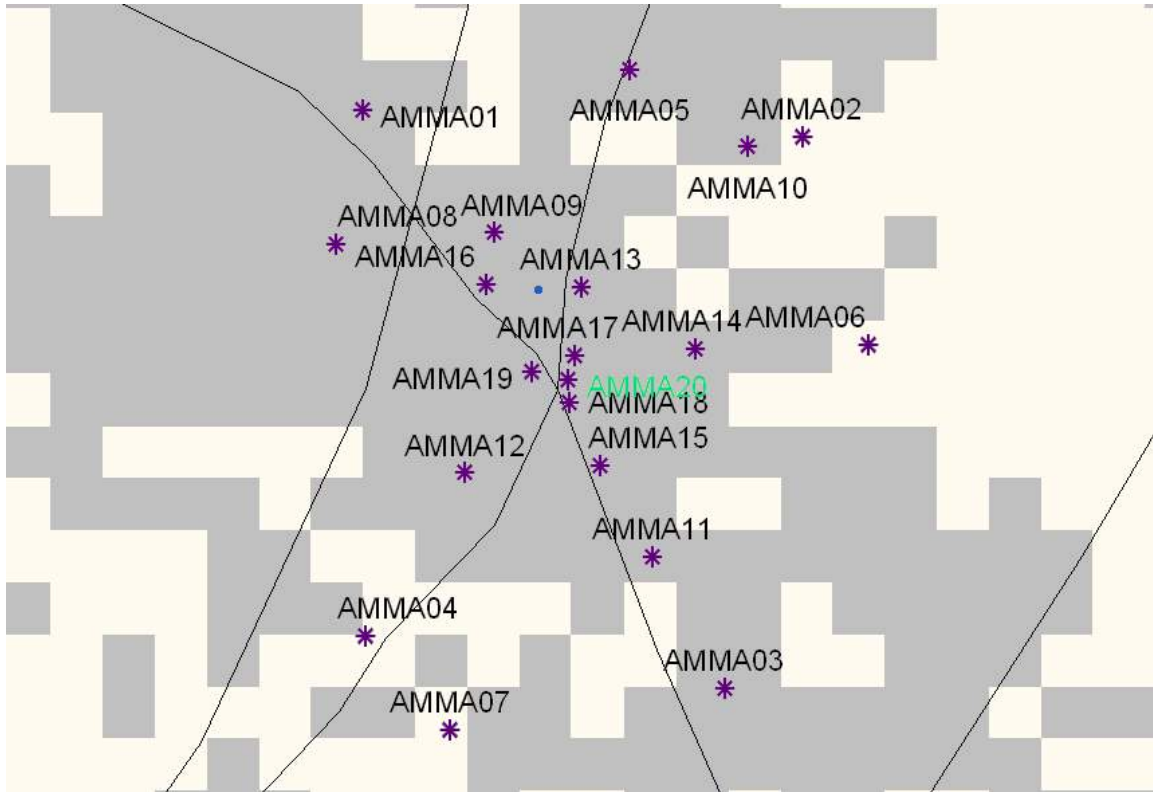


Figure 19: Dense-scale rain gauge network



*Dense Scale Rain Gauge Sites:*

Site: AMMA01

Location: 14.57416°, -16.76010°

Village: Mbefeth-Sousoum

Notes: Good Site

Gauge information: S/N: 05-411

Logger information: S/N: 903707

Date Deployed: 10 August 2006



Figure 20: AMMA01 rain gauge site.

Site: AMMA02  
Location: 14.56988°, -16.68987°  
Village: Medine-Fissel  
Notes: Good Site  
Gauge information: S/N: 05-392  
Logger information: S/N: 903706  
Date Deployed: 10 August 2006



Figure 21: AMMA02 rain gauge site.



Site: AMMA03  
Location: 14.48177°, -16.70323°  
Village: Fao  
Notes: Good Site  
Gauge information: S/N: 05-393  
Logger information: S/N: 903717  
Date Deployed: 10 August 2006



Figure 22: AMMA03 rain gauge site.



Site: AMMA04  
Location: 14.49025°, -16.75965°  
Village: Godoguene-Keur Guene Ndong  
Notes: Good Site  
Gauge information: S/N: 05-399  
Logger information: S/N: 903711  
Date Deployed: 10 August 2006



Figure 23: AMMA04 rain gauge site.

Site: AMMA05  
Location: 14.58057°, -16.71743°  
Village: Koone  
Notes: Good Site  
Gauge information: S/N: 05-397  
Logger information: S/N: 903725  
Date Deployed: 10 August 2006



Figure 24: AMMA05 rain gauge site.



Site: AMMA06  
Location: 14.53655°, -16.67934°  
Village: Guitir  
Notes: Good Site  
Gauge information: S/N: 05-395  
Logger information: S/N: 903710  
Date Deployed: 10 August 2006



Figure 25: AMMA06 rain gauge site.



Site: AMMA07  
Location: 14.47520°, -16.74600°  
Village: Daphthior  
Notes: Good Site  
Gauge information: S/N: 05-415  
Logger information: S/N: 903716  
Date Deployed: 10 August 2006



Figure 26: AMMA07 rain gauge site.

Site: AMMA08  
Location: 14.55265°, -16.76433°  
Village: Gningning  
Notes: Good Site  
Gauge information: S/N: 05-407  
Logger information: S/N: 903715  
Date Deployed: 10 August 2006



Figure 27: AMMA08 rain gauge site.



Site: AMMA09  
Location: 14.55452°, -16.73889°  
Village: Ndiandiaye-Soueme  
Notes: Good Site  
Gauge information: S/N: 05-406  
Logger information: S/N: 903722  
Date Deployed: 10 August 2006



Figure 28: AMMA09 rain gauge site.



Site: AMMA10  
Location: 14.56825°, -16.69858°  
Village: Loumatir-Keur Dethie-Niane  
Notes: Good Site  
Gauge information: S/N: 05-394  
Logger information: S/N: 682969  
Date Deployed: 10 August 2006



Figure 29: AMMA10 rain gauge site.

Site: AMMA11  
Location: 14.50287°, -16.71382°  
Village: Thiandene Niambour  
Notes: Good Site  
Gauge information: S/N: 05-410  
Logger information: S/N: 682964  
Date Deployed: 10 August 2006



Figure 30: AMMA11 rain gauge site.



Site: AMMA12  
Location: 14.51630°, -16.74367°  
Village: Godoguene  
Notes: Good Site  
Gauge information: S/N: 05-405  
Logger information: S/N: 664410  
Date Deployed: 10 August 2006



Figure 31: AMMA12 rain gauge site.



Site: AMMA13  
Location: 14.54584°, -16.72522°  
Village: Ndiandiaye-Pondaye  
Notes: Good Site  
Gauge information: S/N: 05-414  
Logger information: S/N: 903713  
Date Deployed: 10 August 2006



Figure 32: AMMA13 rain gauge site.

Site: AMMA14  
Location: 14.53599°, -16.70704°  
Village: Mbala Khate-Yoryore  
Notes: Good Site  
Gauge information: S/N: 05-403  
Logger information: S/N: 903723  
Date Deployed: 10 August 2006



Figure 33: AMMA14 rain gauge site.



Site: AMMA15  
Location: 14.51753°, -16.72229°  
Village: Thiandene Nder  
Notes: Good Site  
Gauge information: S/N: 05-416  
Logger information: S/N: 903714  
Date Deployed: 10 August 2006



Figure 34: AMMA15 rain gauge site.



Site: AMMA16  
Location: 14.54618°, -16.74024°  
Village: Titine  
Notes: Good Site  
Gauge information: S/N: 05-408  
Logger information: S/N: 707862  
Date Deployed: 10 August 2006



Figure 35: AMMA16 rain gauge site.

Site: AMMA17

Location: 14.53487°, -16.72627°

Village: Ndiagianiao-Both-Escale

Notes: Good Site

Gauge information: S/N: 05-412

Logger information: S/N: 903709

Date Deployed: 10 August 2006



Figure 36: AMMA17 rain gauge site.



Site: AMMA18  
Location: 14.52748°, -16.72715°  
Village: Mbafaye  
Notes: Good Site  
Gauge information: S/N: 05-398  
Logger information: S/N: 903718  
Date Deployed: 10 August 2006



Figure 37: AMMA18 rain gauge site.



Site: AMMA19  
Location: 14.53241°, -16.73293°  
Village: Godaguene-Ndender  
Notes: Good Site  
Gauge information: S/N: 05-401  
Logger information: S/N: N903708  
Date Deployed: 10 August 2006



Figure 38: AMMA19 rain gauge site.

Site: AMMA20

Location: 14.53120°, -16.72733°

Village: CERP Ndiagianiao (center gauge)

Notes: Co-located with Met Office gauge, good site

Gauge information: S/N: 05-413

Logger information: S/N: 682965

Date Deployed: 10 August 2006



Figure 39: AMMA 20 rain gauge site.