ARUBA

CLIMATOLOGICAL SUMMARY 2011

PRECIPITATION

The total amount of rainfall recorded at the Reina Beatrix International Airport for the year 2011 was 826.2 mm (normal is 409 mm). From January till March 2011 a total of 215.6 mm of rainfall has been recorded at the Reina Beatrix International Airport (26.1 % of the total amount for 2011). From April through June 2011 a total of 101.8 mm of rain was recorded (12.3% of the total amount for 2011). From July through September 2011 a total of 88.6 mm of rain was recorded (10.7 % of the total amount for 2011). The last quarter of the year 2011 a total of 420.2 mm (50.9 % of the total amount for 2011) was recorded. The last quarter of 2011 was quite wet with the ***wettest*** month being the month of October 2011 where a total of 173.6 mm of rain fell. The highest recorded rainfall in **24 hours** was recorded on October 14 2011 with a total of 91.6 mm. The all time record of recorded 24 hour rainfall data was 196.6 mm in September 2004. The above normal rainfall averages for 2011 were forecasted by DMA's long-term forecast. The main reason was favorable atmospheric and oceanographic parameters in the Pacific and the Atlantic.

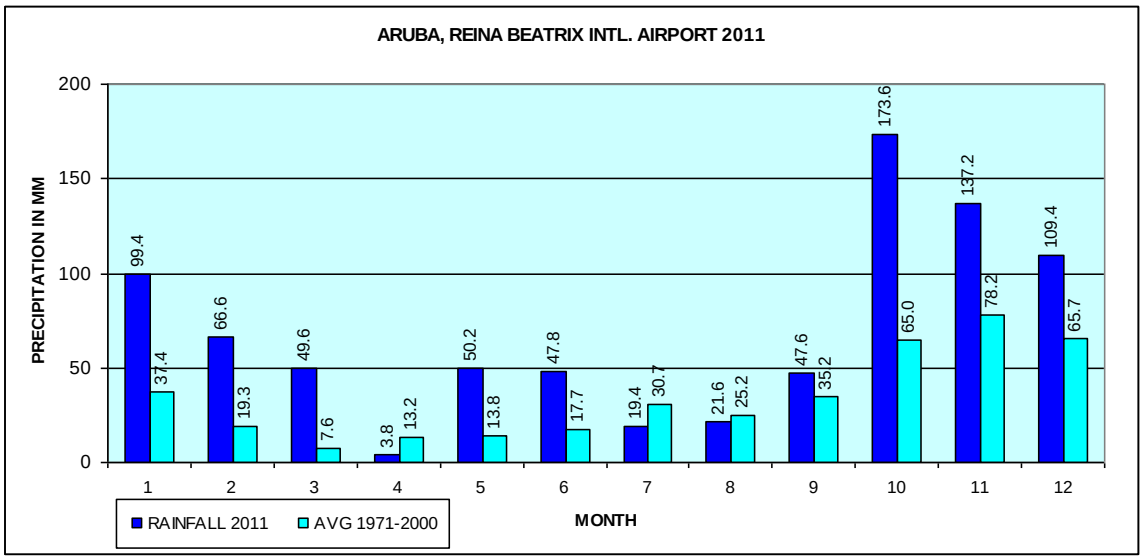

Figure 1. Rainfall 2011 versus Normal

TEMPERATURE

The average air temperature recorded at the Reina Beatrix International Airport in 2011 was 28.3 ºC (normal value is 27.8 ºC, 28.8 ºC in 2010). August 2011 had an average of 29.9 ºC and September 2011 had an average of 29.7 ºC, therefore these 2 months are the warmest months of 2011. The average maximum temperature for August 2011 was 33.8 ºC and the average maximum for September 2011 was 33.4 º C.

The absolute maximum temperature of 35.4 º C was recorded on August 4 2011.
The absolute minimum temperature of 22.0 º C was recorded on March 13 2011.

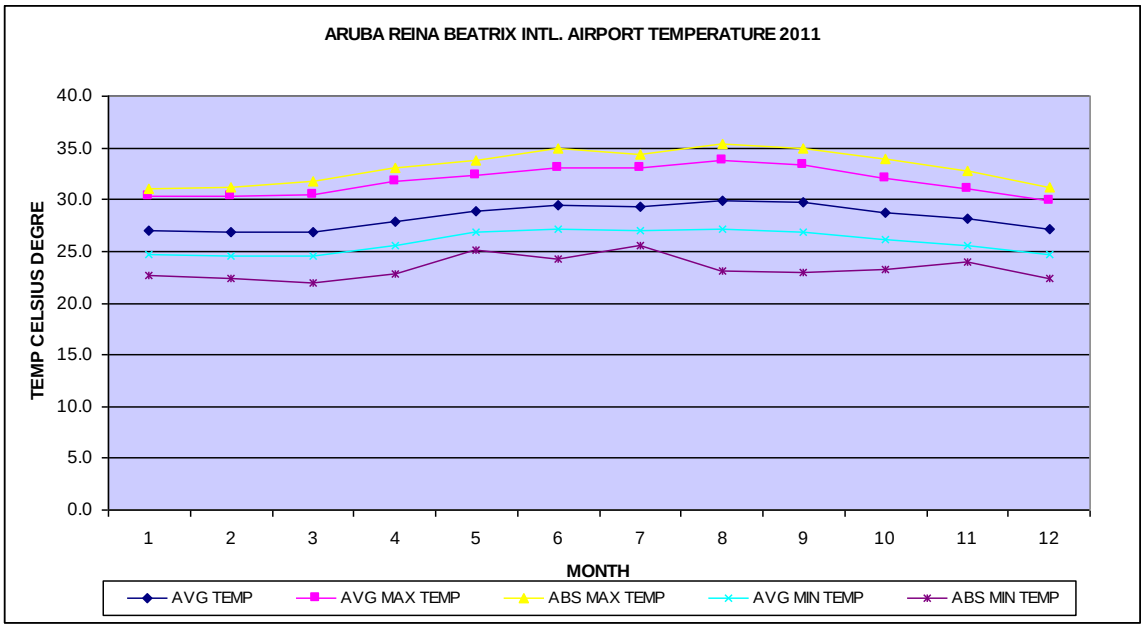

Figure 2. Average, Average Max, Absolute Max, Average Min, and Absolute Min Temperature 2011

WINDSPEED

The year average windspeed at 10 meters height for the year 2011 at the Reina Beatrix International Airport was 6.0 m/sec (normal value is 7.5 m/sec, 2010 was 6.2 m/sec). The highest average windspeed of 7.6 m/sec was recorded during the month of July 2011. The lowest average windspeed was recorded during the month of November 2011, respectively 4.2 m/sec. The highest average maximum of windspeed of 15.2 m/sec was recorded on July 2011 and the absolute maximum windspeed of 21.1 m/sec was recorded during the month of December 2011. On Aruba, usually, the absolute maximum windspeed happens in the month of July.

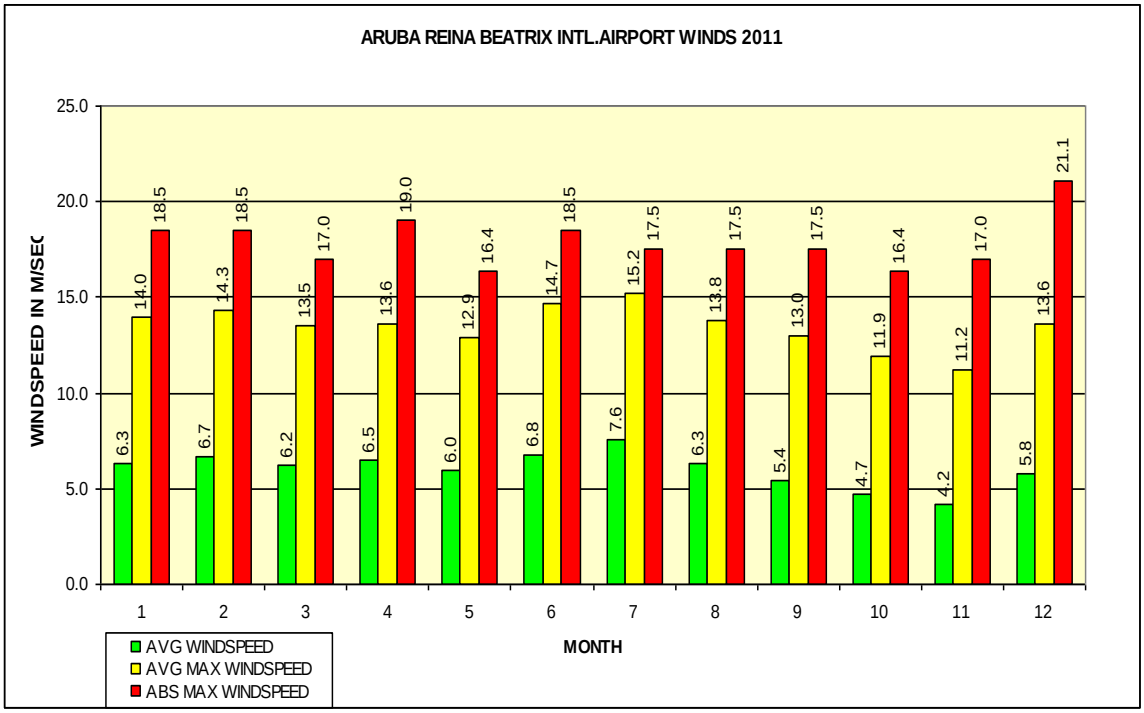

Figure 3. Average windspeed, Average Max windspeed, Absolute Max windspeed

ATMOSPHERIC PRESSURE

The average atmospheric pressure recorded at the Reina Beatrix International Airport was 1011.2 mb. The highest monthly atmospheric pressure of 1012.8 mb was recorded on February 2011 with the lowest on November 2011 respectively 1009.9 mb.

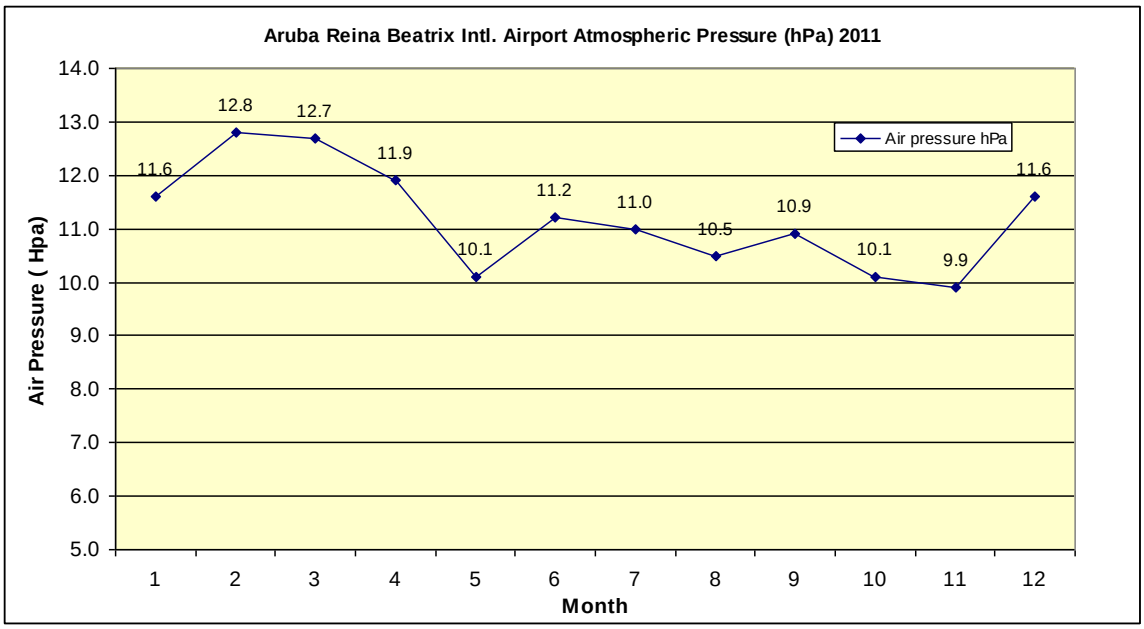

Figure 4. Atmospheric Pressure in hPa (+1000 hPa).

SPECIAL EVENTS DURING THE YEAR 2011
Weather Events

Landspout
On May 17th 2011 around 11:00 am lt a landspout was spotted overhead the island (Paradera District) which caused considerable damage to the Paradera Roman Catholic Church, a nearby school and some houses in the surrounding area. On this day winds were relatively calm and varied from direction. Due to a seabreeze convergence combined with moist air, a small area of thunderstorms developed over the central part of Aruba. The landspout developed due to low- mid level convergence, upward motion and extra spin due to the seabreeze effect and weak meso-scale low level winds on Aruba.

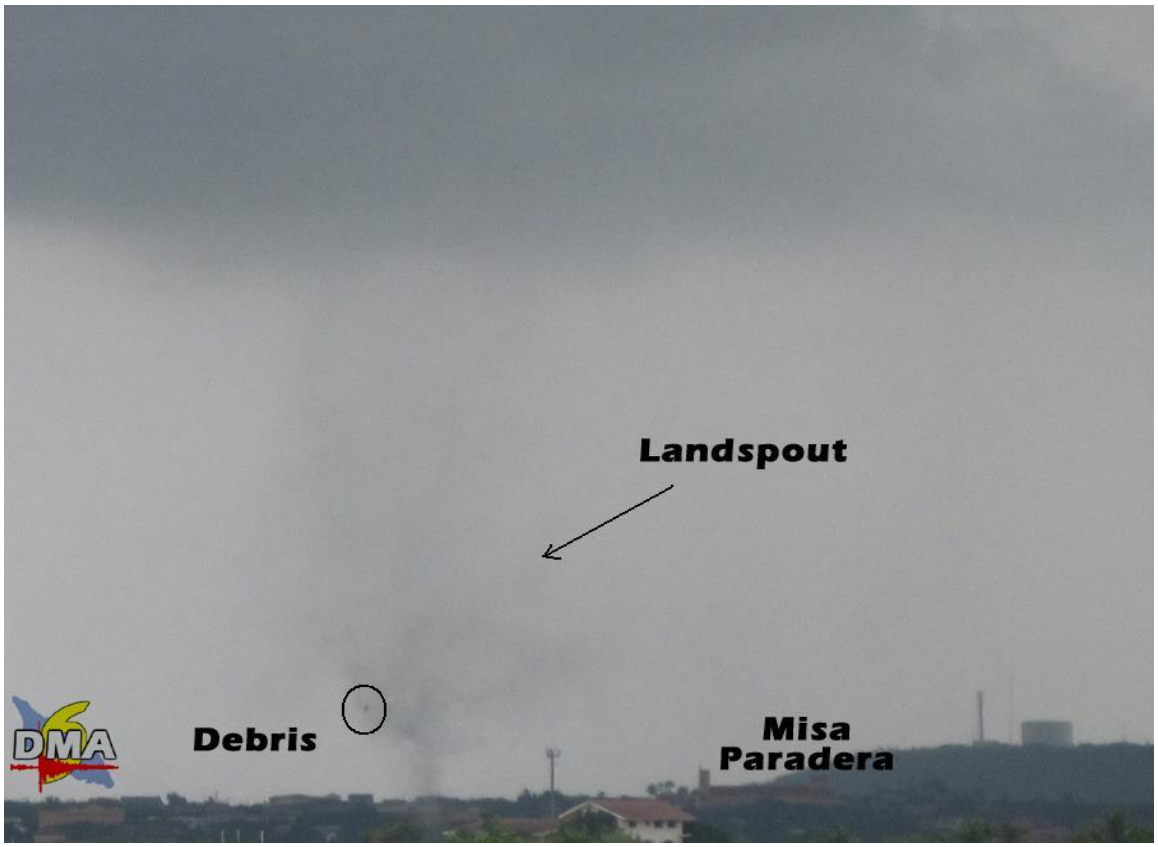

Figure 5. Landspout near Paradera taken from DMA

Microburst

During the early morning hours of August 25, 2011 a thunderstorm area developed to the northwest of Venezuela. This area was moving in an east-northeasterly direction towards Aruba. The duty weather-observer reported light to moderate thunderstorms near Aruba between 06:00 am to 07:00am lt. Where between 6:15am lt to 6:50 am lt, 2 different microbursts (strong localized downdrafts) occurred near the 'Noord' district. These two microbursts caused some substantial damage to the Santa Ana Roman Catholic Church and other structures around the 'Noord' district. Although a very rare weather phenomena roughly the same incident took place back in 2007 where a pleasure sailboat was capsized due a strong downdraft ahead of an area of fast moving showers. Although microbursts are extremely dangerous, no human casualties or injuries were reported during the 2011 event. Microbursts are many times confused by the public as land or waterspouts, for example damage caused by a microburst at Hoogeveen (NL) was reported by the public as a landspout.

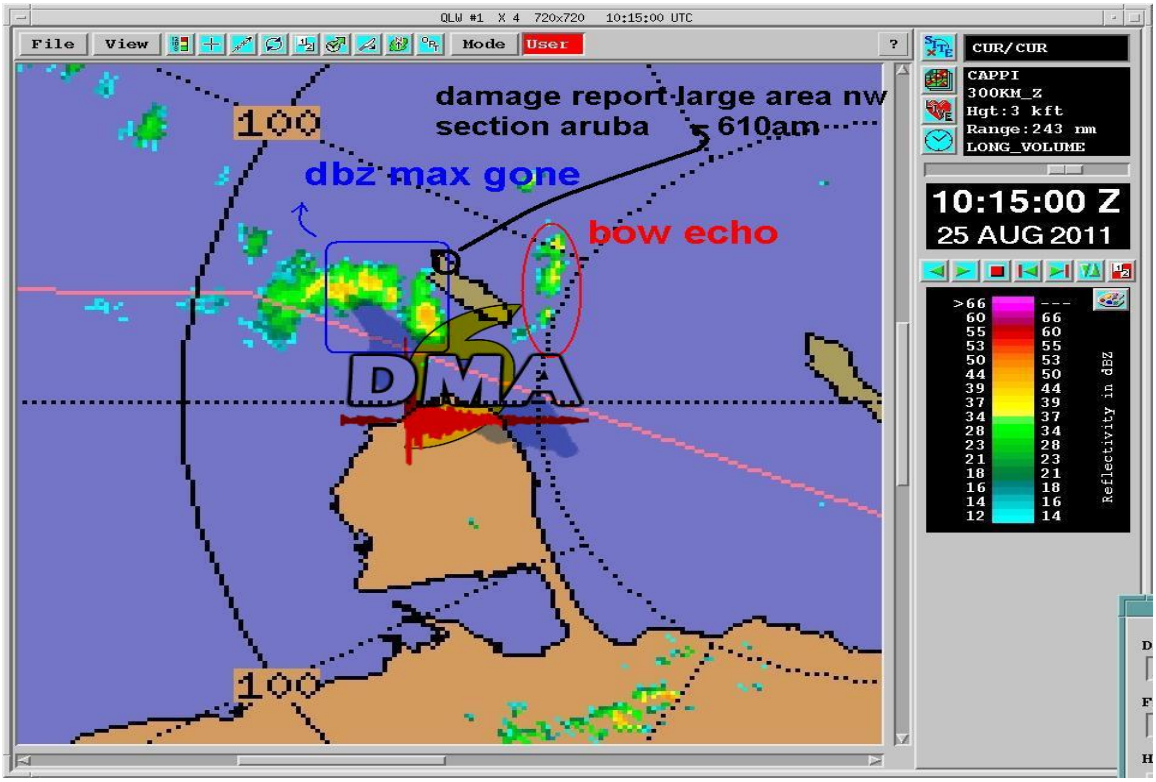

Figure 6. Radar image 6:15 am AST August 25, 2011

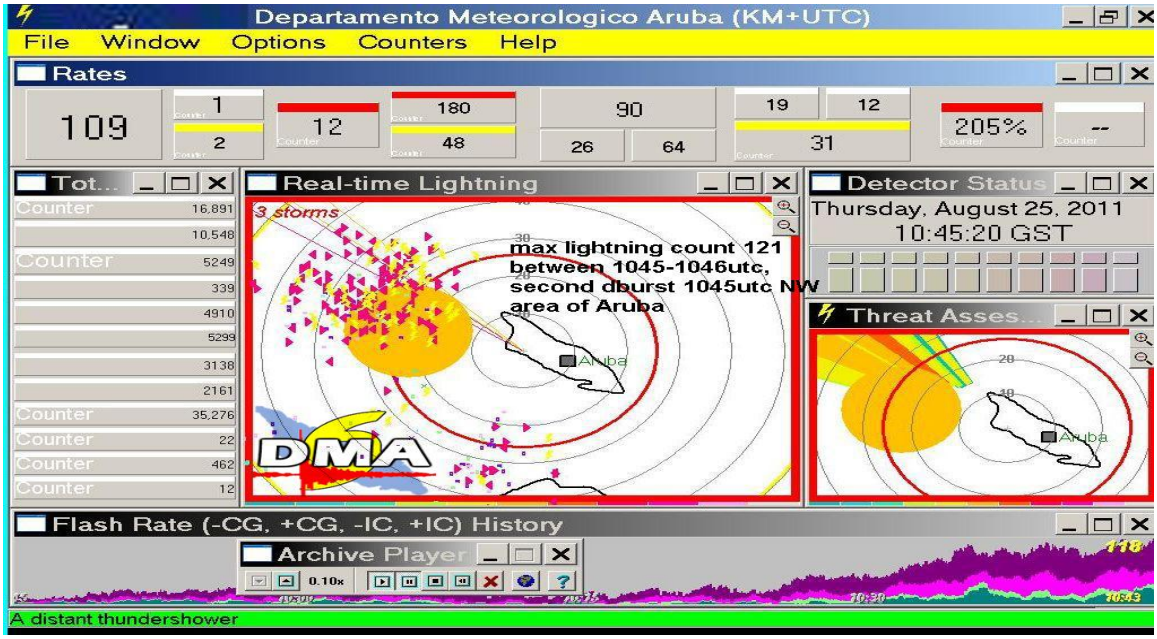

Figure 7. Lightning Detector image 6:45 am August 25, 2011

Climate Change to blame for these rare events?

Scientists cannot attribute a particular weather event (flooding, microburst, etc.) to global warming and little can be said about past or future trends in the risk of high profile hazards such as tropical cyclones. Damage from weather disasters have been climbing world-wide, but according to scientist this can be attributed only to the trend to the increasing exposure of life and property to weather risks. Climate change may be involved, but a case cannot yet be made. Despite uncertainties, the Intergovernmental Panel on Climate Change (IPCC) stresses that there is still reason for taking action now. The IPCC recommends "low regrets measures," as improvements in everything from drainage systems to early warning systems. Such measures would benefit society in dealing with the current climate as well as with almost any range of possible future climates. According to the IPCC attributing a single extreme event to anthropogenic climate change is challenging. They did find evidence though of some change in some extremes. They are generally lower-profile changes; for example, the number of cold days and nights has decreased since 1950. The IPCC indicates that that in many regions there is a medium confidence that the length or number of warm spells, or heat waves, has increased. The IPCC did note also that the frequency of heavy precipitation events has changed in some regions with increases being more likely than decreases. The IPCC also indicates that there are no signs that any of these climate changes have been driving the obvious rise in economic losses from weather- and climate- related disasters. Instead, they show that the major cause of the long-term increases in economic losses has been an increase in the number of dangerously placed people and their increasing wealth. More and more people have been living in the path of disastrous weather, whether poor people with nowhere else to live or the rich flocking to the coastlines.

Seismological Events

The following earthquakes were felt by residents on Aruba. All reported earthquakes were confirmed through the seismological network of DMA. The earthquake of 27/08/2011 caused some damage to houses on Aruba. This earthquake was felt on the whole island. The public reported being swung left-right-up-down, and loud thunder like rumblings. All these features are common during an earthquake. It was, also, reported that dogs behaved normally until the loud thundering noises.

Date (day/month/year)	Hour (UTC) (hr:min:sec)	Latitude (N)	Longitude (W)	Magnitude (Mw)	Depth (KM)	Distance From DMA (KM)
12/3/2011	09:26:41	12.08	69.89	4.1	17.3	49 Southeast
27/8/2011	16:15:30	12.48	69.72	4.7	15	31 East
29/8/2011	00:21:10	12.50	70.02	1.3	11.6	1.5 West
31/10/2011	08:37:27	12.48	70.19	2.2	3.0	19 West-Southwest

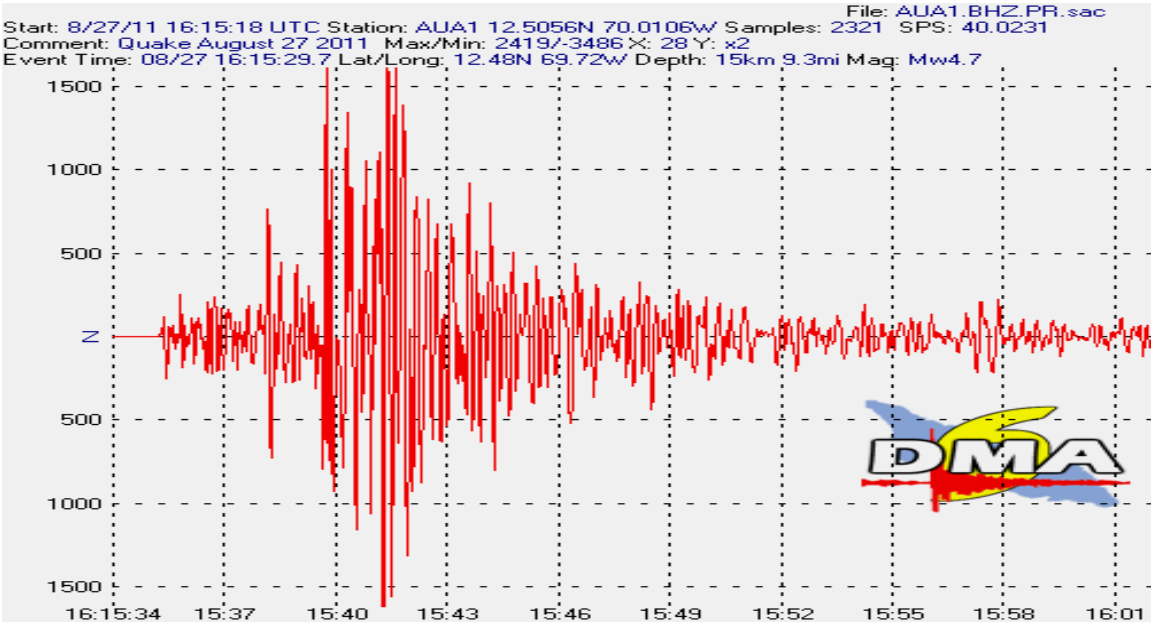

Figure 8. Earthquake of 4.7 Mw 31 KM East of DMA

Figure 9. Position of earthquakes of 2011 that were felt by the public.

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