

# **PRELIMINARY REPORT**

## **Fog Water Harvesting Evaluation**

**Eritrea Survey January 2005**



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### **Brief Report:**

A fog water harvesting potential evaluation were done in Eritrea during January 3 to January 21 in the mountainous area located in the northeast of Asmara. Five Standard Fog Collectors were installed in four areas specified later in this report, preliminary results show a very high potential of the water from fog to be a safe, clean and sure source of water for the rural areas for both, domestic and agricultural applications.

### **Future areas to be evaluated:**

There are more areas to be researched in order to try different locations in the country as follow:

1. Durfos Bar – 1 SFC
2. Arborobu – 1 SFC in the northwest slope of the village and 1 SFC in the north east slope of the village
3. Nefasit – 1 SFC located east from the actual SFC 3
4. Other in a place that HABEN team can decide

### **Important considerations related with the SFCs and the measurements:**

1. Care of the SFC: The Standard Fog Collector is a scientific instrument to evaluate fog water potential, must be controlled weekly looking for any leakage, damage in the mesh or in the structure, if something appear, must be fixed as soon as possible.
2. Care of the Data: The data from the SFC is a relevant information and must be managed carefully, specially in the transference of information from the field data sheet to the computer EXCEL files.
3. Follow up of the observers: The observer plays a main role in the evaluation, so must be controlled weekly to check the procedures and the accuracy of the work they are doing.

### **Data transference protocol:**

1. The data must be collected in a weekly period, providing the observers with new Data Sheets and others needs they will ask to do a good work. The data sheet file name is **FOG WATER DATA COLLECTION SHEET ERITREA 2005.XLS**.

2. Data from the field has to be transferred into the EXCEL file prepared specially, the file name is **DATA SFC ERITREA 2005.XLS**, carefully and always.
3. The final step is send in the same weekly basis, an email with the file attached to Pablo Osses in Chile to the email address: [posses@puc.cl](mailto:posses@puc.cl) to be evaluated and follow the results of the survey. Any questions or new locations must be also informed.
4. Later in this preliminary report is a format to manage the information from the SFCs located, please follow it to keep the accuracy of the data and research.

## DESCRIPTION OF STANDARD FOG COLLECTOR (SFC) SITES ERITREA, JANUARY 2005

### SFC 1

- Area name: Arborobu
- Location UTM (WGS 84): 500783 – 1696650
- Orientation of the SFC: 350° (Almost North)
- Elevation: 2100 m.a.s.l.
- Observer name: Melles Hagos
- Land owner: Government

### Brief Description:

The SFC is located in a small summit in the western side of an old water tank for the train station located here. There is a school very near, and a small village called Arborobu. Actually the water supply of the area is by truck and donkeys loaded with water containers from the surroundings. The village is located in a large saddle between two summits of 2300 m.a.s.l. approximately. The area is crossed by the road Asmara – Massawa, a very good accessibility over the year is therefore available. There is room enough for several Large Fog Collectors (LFC) in the area.

There are evidences of water collection from fog and rain, mainly done by the train company, who build large channels around the windward and leeward slopes of the eastern peak of Arborobu, driving the water into a huge reservoir still in good conditions to keep enormous amounts of water for long time.



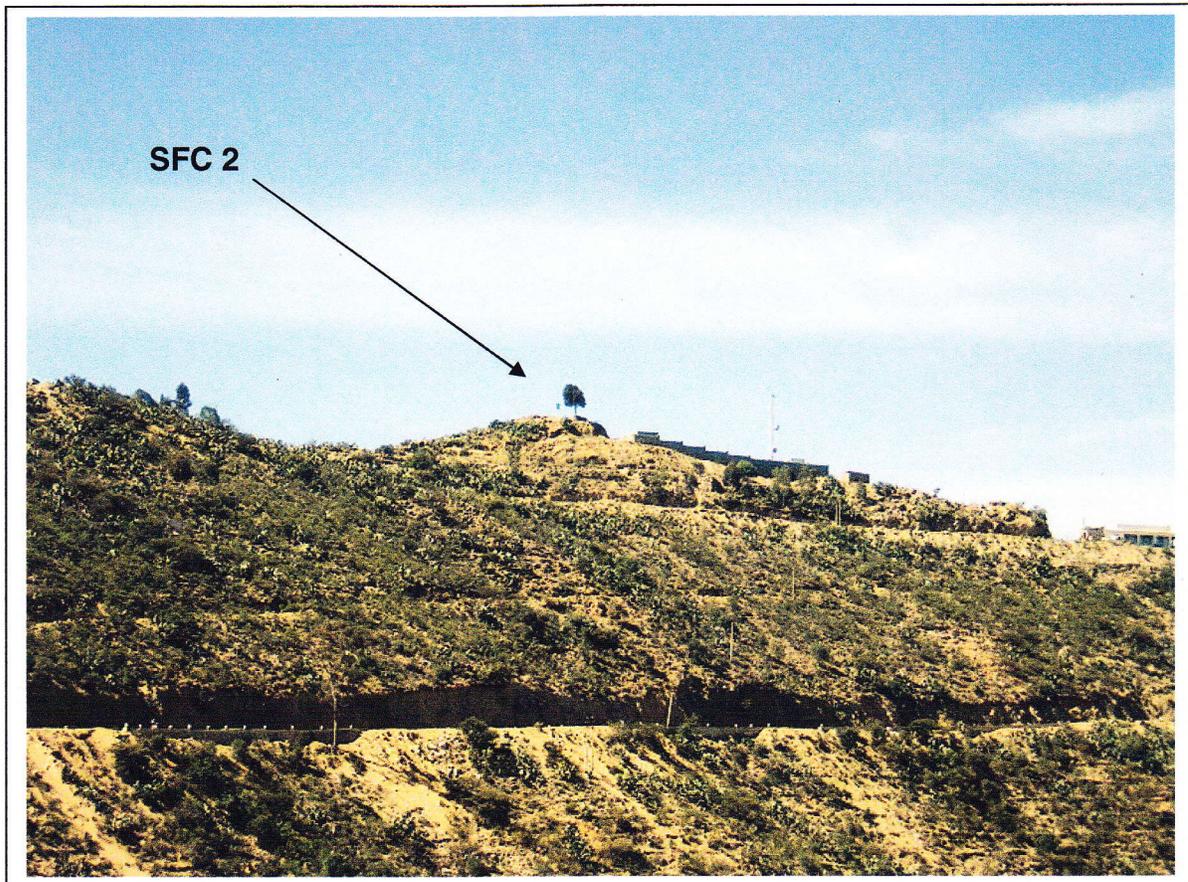
Picture 1: SFC 1 location

## SFC 2

- Area name: Seidici
- Location UTM (WGS 84): 503863 - 1694759
- Orientation of the SFC: 40° (North-east)
- Elevation: 2100 m.a.s.l.
- Observer name: Melles Hagos
- Land owner: Government

### Brief Description:

The SFC is located in a saddle connecting the north and moist valley with the southern dry areas. Is very close to the main road Asmara - Massawa and there is a small restaurant called Seidici, because is located 16 kilometers from Asmara. A communications antenna is in the area and lot of room for large fog collectors is available. Trees and shrubs are all around, specially in the northern slopes, the one that is facing the moist loaded predominant winds. From the area is possible deliver water from both sides, north and south, specially in this last, there are a number of villages with strong problems of water.



Picture 2: SFC 2 Location

### SFC 3

- Area name: Nefasit
- Location UTM (WGS 84): 506950 - 1694503
- Orientation of the SFC: 0° (North)
- Elevation: 1770 m.a.s.l.
- Observer name: Ablel Fesahaye
- Land owner: Government

#### Brief Description:

Nefasit is a small town, 22 kilometers northeast from Asmara, is crossed by the main paved road that connect the capital with the port of Asmara. The SFC 3 is installed in the top of a small hill near the town, close to the instrument there is a large new cement water reservoir, that is filled with water from truck and from seasonal springs located in the nearest mountains. An important consideration is actually the water project associated with the new cistern involves a delivery system to the town, in this way a good approach would be to add the production from an array of fog collectors to the reservoir.

In other hand, downslope from the hill, is the Debre Bizen primary and secondary school, that can be benefited with the water production and also can be used as a way to show the benefits of the system.

There is room enough for many Large Fog Collectors in the area.



Picture 3: SFC 3 Location

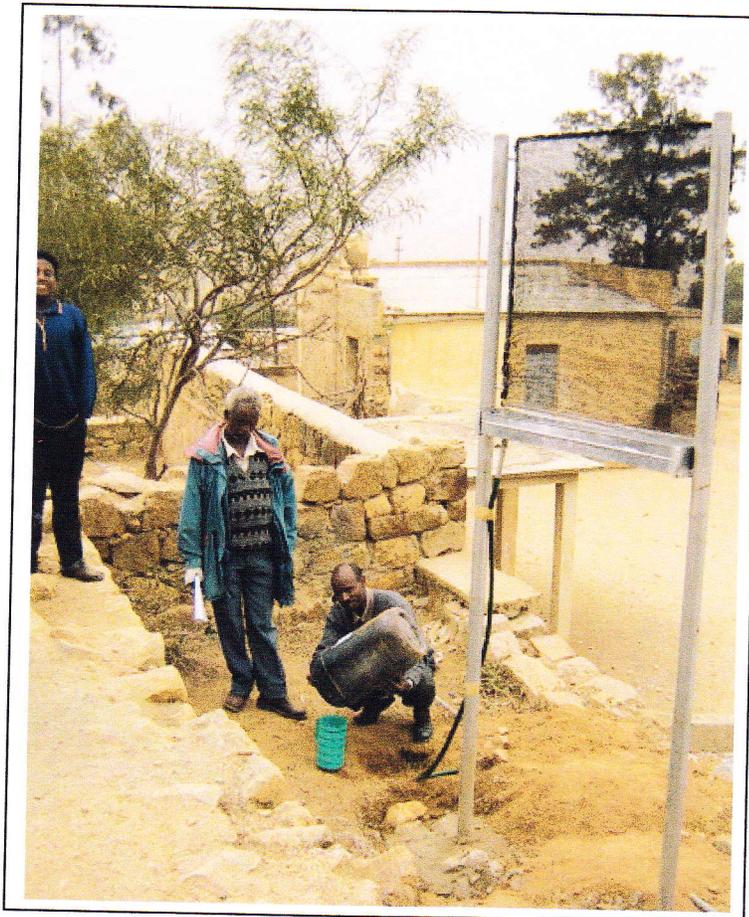
#### SFC 4

- ❑ Area name: Nefasit (Debre Bizen School)
- ❑ Location UTM (WGS 84): 506940 - 1694710
- ❑ Orientation of the SFC: 360° (North)
- ❑ Elevation: 1730 m.a.s.l.
- ❑ Observer name: Ablel Fesahaye
- ❑ Land owner: Debre Bizen School

#### Brief Description:

This instrument is located into the yard of Debre Bizen primary and secondary school in the town of Nefasit. The main goal of this instrument despite the results is to show the students how it works and get them familiar with the technology. Also can be used for small agricultural activities, how the school director mention during the activities. The accessibility here is very good from the road to Massawa.

There is no room for Large Fog Collectors into the school, open areas are located south east from the school installations, according to the results.



Picture 4: SFC 4 Location

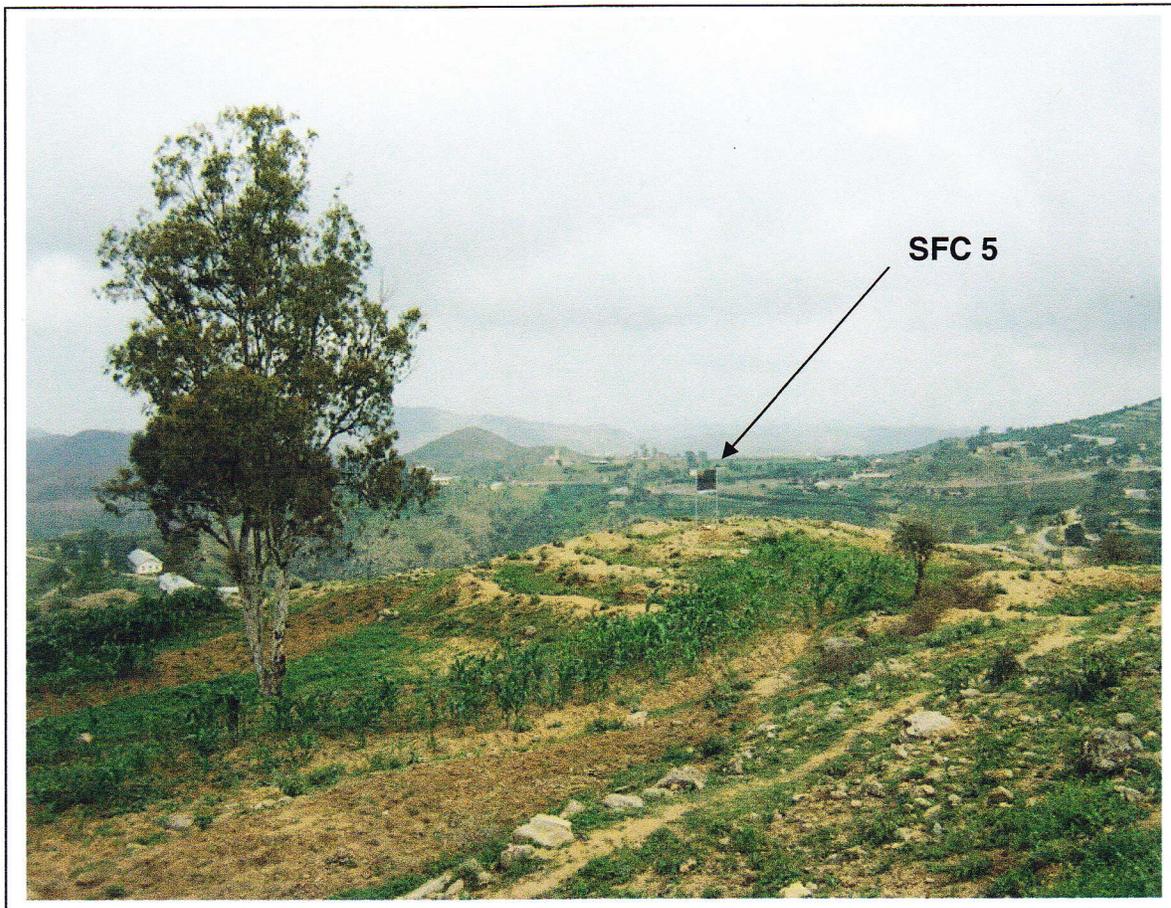
## SFC 5

- Area name: Embatkala
- Location UTM (WGS 84): 507877 - 1702324
- Orientation of the SFC: 030° (Northeast)
- Elevation: 1380 m.a.s.l.
- Observer name: Nessler Saleh
- Land owner's name: Halina Mohammed

### Brief Description:

Embatkala is a village with a scattered occupation crossed by the main road from Asmara to Massawa. Even though the elevation is not very high, this area presents a mixture of weather patterns, because it is affected by the influence of coastal rains and also catches some humidity from the orographic clouds originated in the nearest mountains. That is why it shows a common green color with a lot of cultivated terraces. The SFC is located in the upper section of Embatkala in order to know the behavior of the fog in low elevations.

There is room enough for many Large Fog Collectors.



Picture 5: SFC 5 Location