Local climate and ‘proverbs of weather forecast’ in Sinazongwe

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1. Introduction

On April 2007, we have investigated the social basements in many villages in Sinazongwe District and chose the target villages of our project. At that time I have collected information about local climate and ‘proverbs of weather forecast’, and try to interpret them to connect the real meteorological phenomena.

2. Relationships between elevation, topography and local climate

1) Precipitation in upland (ca. 1000m above sea level) is larger than lowland (ca. 500m). [Mugilo Village (1018m)]

It’s from the information of people who had lived in lowland—near the lake Kariba, and moved to upland, Mugilo Village (1018m). They said that the circumstances in upland are better than lowland which they had lived before.

2) In June and July sometimes crops are damaged by frost, especially in the valley. [Sikalindi Village (1038m), Mugilo Village (1018m)]

It seems that the case of minimum temperature falls below 0℃ is not so rare. In the valley on upland, cold-air-lake is possibly made under cold weather in winter.

3. An importance of early stage in rainy season for planting schedule

The information about rainy season and agriculture are summarized as follows;

1) Delay of rainy-season-beginning causes great damage to the crops. [Sikalindi Village (1038m)]
2) Dryness in January is the worst for the crops. [Chande Village (526m)]
3) Beginning of rainy season is very important. Farmers use the flowering of Mugololo tree (Fig. 1) for the index of rainy season start. [Kanego Village (968m)]
4) In case of rain in October, farmers start to plant from flat land field because they believe that the rain in October indicates good rainy season. In the meantime, in case of no rain in October and November, farmers think that the draught will occur and start to plant from river bank fields. [Siameja Village (535m)]

In 2006 in Siameja Village, they had first rain on 19th November. Because that date was delayed from normal, farmers planted from river bank field. But on 21st January in 2007, river bank field was attacked by flood and crops were swept away

4. Cycle of flood in lowland

A flood is big problem in lowland area.

1) It heavily rained on 21st January 2007 and then flood occurred. All crops in river bank field were swept away. [Lusinga Village (528m), Kalanguwa Village (507m), Siameja Village (535m)]

2) Flood occurrence has 5-year cycle. [Lusinga Village (528m), Siameja Village (535m)]

3) Main-past-floods are; January in 1978 (scale is same as in 2007), February in 1985 (small scale), and March in 2003 (small scale). [Siameja Village (535m)]

Fig.1 Mugololo tree.

We easily image about 5-year cycle as ENSO (El Nino and Southern Oscillation) from four- to six-year cycle. In winter 2006/2007, sea surface temperature (SST) in the tropics showed El-Nino pattern and there were great drought in Australia and big flood in Jakarta, Indonesia. We should investigate the relationship between rainfall in Zambia and ENSO cycle.

5. Proverbs of weather forecast

Proverbs of weather forecast are summarized as follows;

1) In case white butterfly flies, rainy season soon comes. In case black butterfly flies, farmers will get the rain for planting. [Siabunkululu Village (1023m)]

2) When acacia tree shoots, rainy season will finish. [Siabunkululu Village]

3) When wind velocity strongly increase, rainy season will finish. Easterly wind is corresponded to dry season, and westerly wind indicates strong rain. [Siabunkululu Village]

4) When people hear the sound-of-wind, after three to four days it will rain. [Siabunkululu Village]

5) From September to October, in case water drops from Mugololo tree (Fig.1) it will fully rain. If water does not drop, farmers firstly plant on hill bottom field, and then if it rains plant on slope and hill top fields. [Sikalindi village (1038m)]

6) It rains during easterly wind blows. If wind is not stable, it doesn't rain. From October to November easterly wind blows and then rainy season starts. [Sikalindi Village]

7) If it strongly rains and next becomes hot in November, good rainy season comes. [Fodowivillage (605m)]

8) If people hear a wind sound (spiritual singing) from between two hills, they will have good rain. [Fodowi village (605m)]

9) If Mutubi tree (Fig.2) shoots from September to October, good rainy season will come. [Mugilo Village (1018m)]

10) Flowering of Mugololo tree is good index for planting. Normally it blooms around September. [Kanego Village (968m)]

11) In case of rain in October, farmers start to plant from flat land field because they believe that the rain in October indicates good rainy season. In the meantime, in case of no rain in October and November, farmers recognize the draught will occur and start to plant from river bank field. Farmers think that the rain in October is big-good-rain. [Siameja Village (535m)]

Fig.2 Mutubi tree

6. Interpretation of proverbs of weather forecast

I think that all proverbs of weather forecast do not relate to meteorological change, but some proverbs possibly indicate the relations with meteorological phenomena. My considerations are as follows;

1) Tree's shooting and flowering, dropping water:
They may be reflections of seasonal moisture increase and/or soil water increase. Whether are they caused by sporadic rain in dry season or memory of soil water long ago?

2) Definition of rainy season by the change of wind direction and speed:
Based on those proverbs, we possibly define the seasonal change by global meteorological field.

3) Forecast of rain by wind-sound:
It may be related to the rain induced by synoptic-scale disturbance.

4) Planting schedule decided by the rain in the beginning of rainy season:
It is possible that the precipitation in the beginning of rainy season restricts all amount of precipitation in rainy season. If ENSO has strong relation to rainy season in Zambia, its influence possibly continue through the rainy season, and then the precipitation in the early stage of rainy season should indicate all amount of precipitation.

7. Conclusion

We started meteorological observation from October 2007 at five villages in Sinazongwe.

Local meteorological observation data are very important not only analyzing local climate but also understanding the meanings of proverbs of weather forecast. If some of the meteorological proverbs indicate global meteorological change, the way of using proverbs to assume the meteorology field is useful for all of Africa and worth to go on the investigation about proverbs.