Karnali Report

Introduction

Nepal is one of the mountainous country that lies in the Himalayan region and one of the climate sensitive country which is tagged as the fourth most vulnerable country of the world in the aspect of climate. Therefore the most of the areas of country has the extreme topographic as well as climatic variability.

The country itself has a vast difference in the northern territory filled with huge mountains ranges to the highest in the world The Mount Everest Peak 8848 meters amsl to the southern flat planes of 70m amsl. This obviously shows the life and the cultural diversity with adverse platforms of living standards within the upper northern and lower southern parts of Nepal.

Karnali is the zone of the country lying in the Mid-western development region. The area of the zone is 21351 km^2 (13266.89 sq mi). The population count according to 2001 census is 309,084. Jumla is headquarter of Karnali zone. Karnali Zone is the largest zone of Nepal with the largest district Mugu, with two national parks. Shey Phoksundo National Park Shey Phoksundo (with Phoksundo Lake-- the deepest lake of Nepal), famous for the snow leopard, is Nepal's largest park with an area of 3,555 km^2. Rara National Park surrounds Rara Lake -- at 10.2 km^2, Nepal's largest lake known as the "Pearl of Nepal".

Karnali among all the other 14 zones in the country is one of the least reachable zone where the hills and mountains are the barriers for the development of the place in the developing country like Nepal with various natural hazards, but of course the people living there have the best effort to the agriculture and animal husbandry.

This is the study of the parameters temperature and rainfall characteristics of the Karnali zone. This study has acquired the averages, decadal variability, and deviations from the selected normal for the two normal i.e. 2000 and the 2010 normal. Due to the data unavailability and the irregularity of the data there is of course the limitation of the parameters which should be taken into account by the viewers of this study.

The list of the Meteorological stations is given below and the study is based on the available data from these selective stations. There are thirteen stations in which three lies in Mugu district, four in Kalikot, one in Dolpa, three in Jumla, and two in Humla.

Station Name	SID	Type of Station	District	Lat	Lon	Elv
MUGU	0301	PRECIPITATION	Mugu	2945	8233	3803
THIRPU	0302	PRECIPITATION	Kalikot	2919	8146	1006
JUMLA	0303	SYNOPTIC	Jumla	2917	8210	2300
GUTHI CHAUR	0304	PRECIPITATION	Jumla	2917	8219	3080
SHERI GHAT	0305	PRECIPITATION	Kalikot	2908	8136	1210
GAM SHREE NAGAR	0306	PRECIPITATION	Mugu	2933	8209	2133
RARA	0307	CLIMATOLOGY	Mugu	2933	8207	3048
NAGMA	0308	PRECIPITATION	Kalikot	2912	8154	1905
BIJAYAPUR (RASKOT)	0309	PRECIPITATION	Kalikot	2914	8138	1814
DIPAL GAUN	0310	CLIMATOLOGY	Jumla	2916	8213	2310
SIMIKOT	0311	CLIMATOLOGY	Humla	2958	8150	2800
DUNAI	0312	CLIMATOLOGY	Dolpa	2856	8255	2058
DARMA	0313	PRECIPITATION	Humla	2944	8206	1950

Temperature

The normal of all the parameters in the meteorology taken from the 30yrs average of the data. This rule is taken into account for each new decade by taking the new decade and leaving the first decade of the study. Temperature of Karnali zone are shown in the figure below which shows the max temperature is 25.2 °C on June to minimum of -4.1°Cin the January. This value is the average of the stations in the list above which are climatological and synoptic.

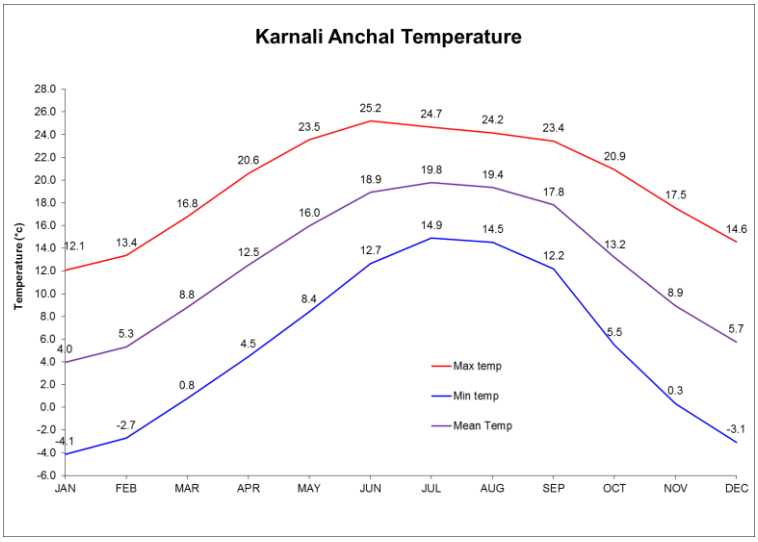


Fig: 1

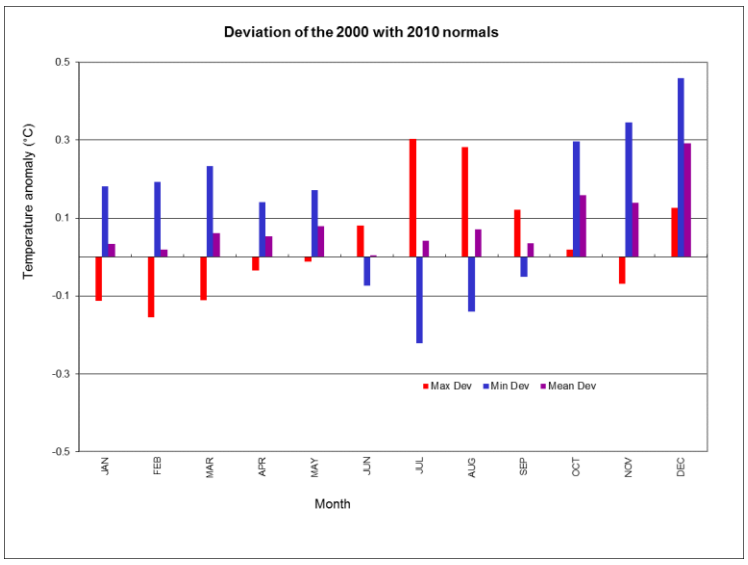


Fig: 2

In the figure 2 there is the deviation of the maximum, minimum and the mean temperature of the 2000 with 2010 normal .This shows that the maximum temperature in the 2010 is warmer in the monsoon than the winter whereas minimum temperature is higher in the pre-monsoon and the winter months. Mean temperature is higher in the winter months. This means overall winters are warming more frequently than the summer months in the recent decade.

Max-temp

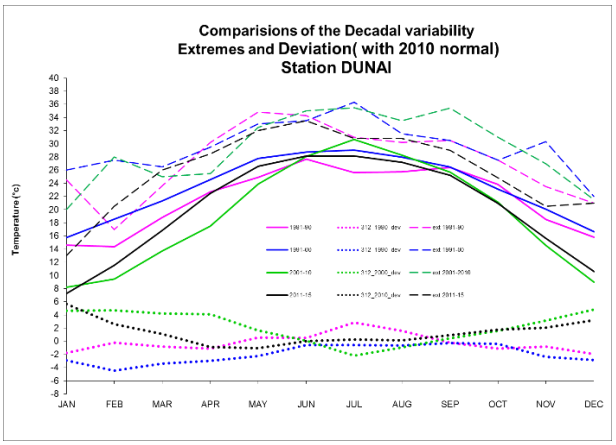


Fig: 3

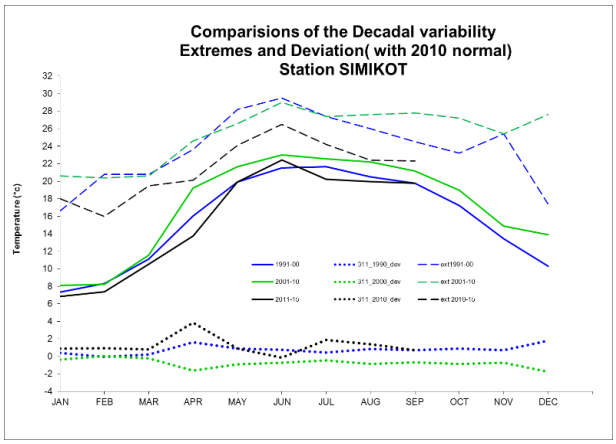


Fig: 4

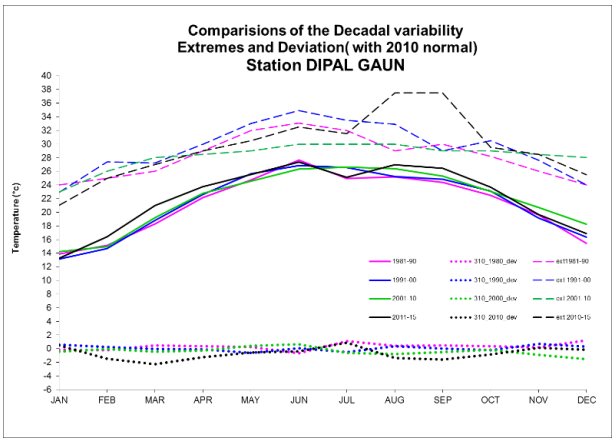


Fig: 5

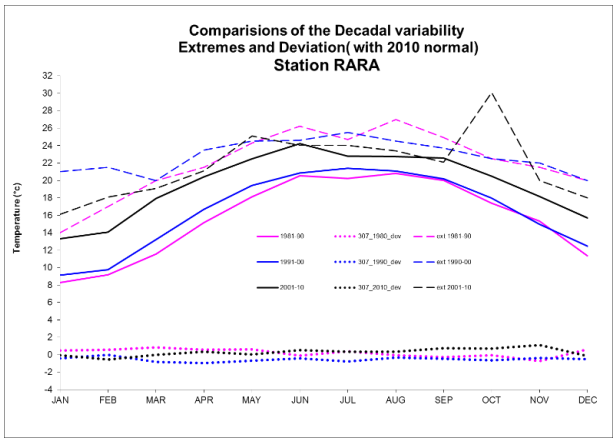


Fig: 6

The figure 3-7 illustrates the comaparisions of the decadal variability ,extremes and the deviations with the 2010 normals of the stations where the observable trends with the extremes, deviations and decadal averages seems to higher in the 2000-10 and 10-14. This shows that the recent decade has the higher maximas in the maximum temperature.

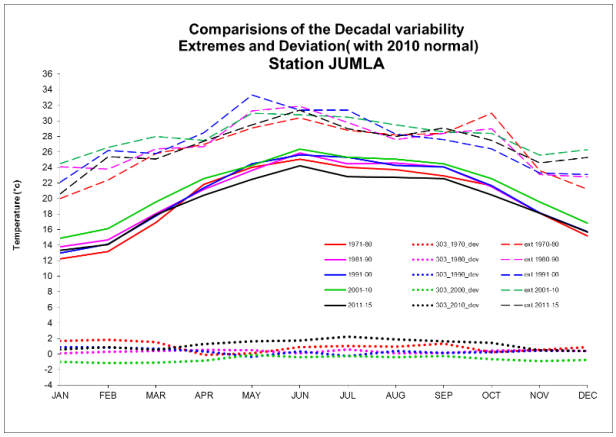


Fig: 7

Min-temp

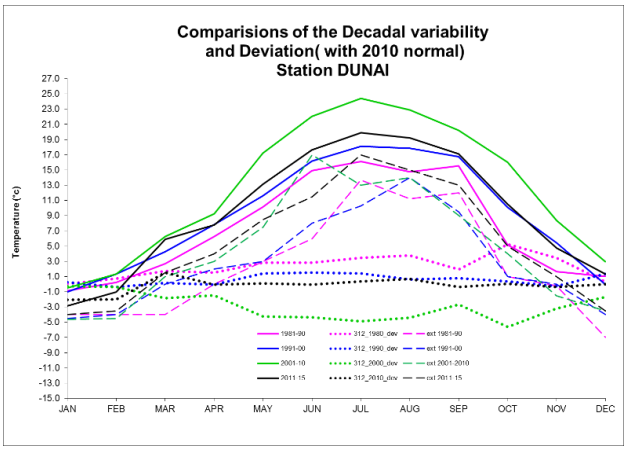


Fig: 8

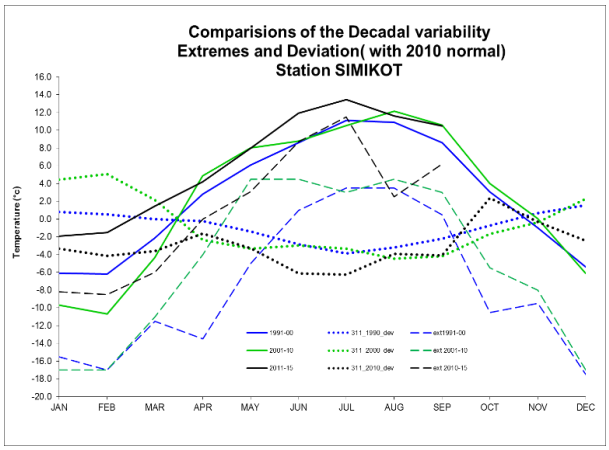


Fig: 9

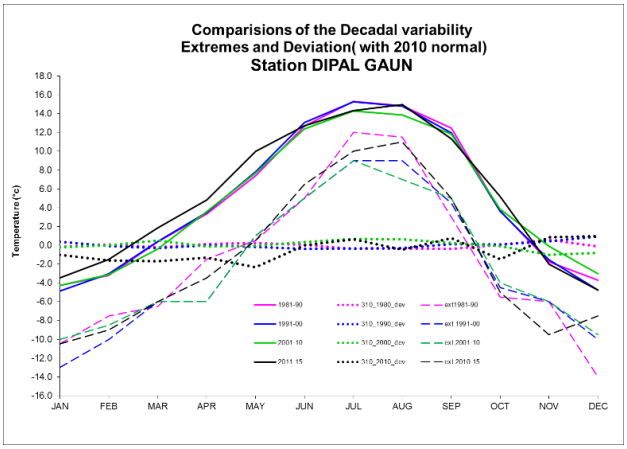


Fig: 10

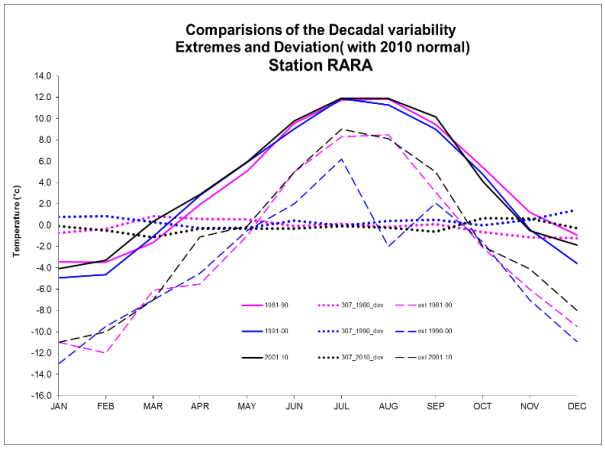


Fig: 11

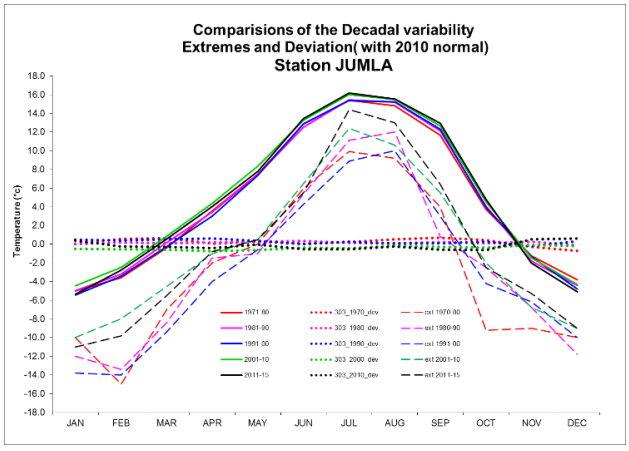


Fig: 12

In the minimum temperature trends the decadal averages are becoming warmer in the recent decade except for Dunai where the 2000-10 was the warmer one. But in all the cases there is the extreme highs

in the 2000-2010 and extreme lows in the 1990-2000 decade. The deviations for the decade 2010-15 shows this period was the warmest than the other ones.

Rainfall

The normal of the Karnali Anchal shows the maximum average is on the month of July with 197.7mm of the rain and the minimum rain normal is on November with 9.4mm.

The deviations of the 2000 with 2010 normal shows that this decade is wetter only in the three months from September to November and the rest of the year is wetter in the 2000 than the 2010. This shows the Karnali is facing dry climate in the recent decade than the previous one.

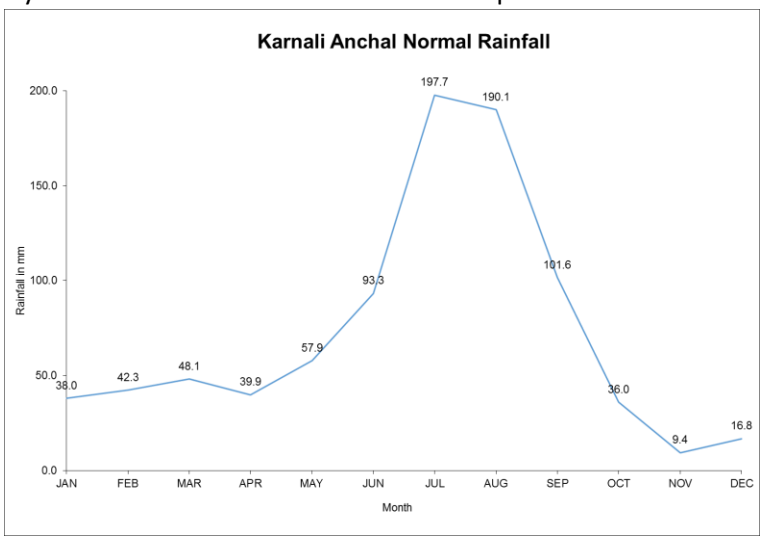


Fig 13

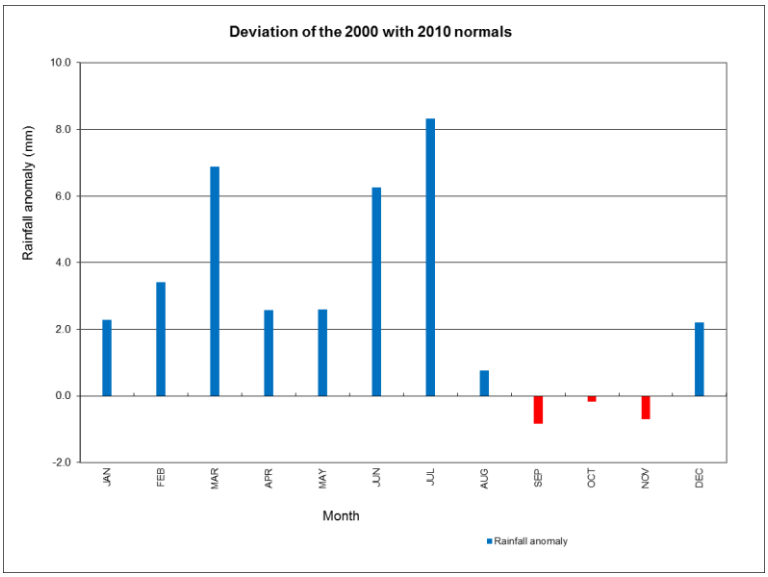


Fig 14

The comparisions of the decadal variability has the maximum value on the 2011-15 in most of the cases but in the Mugu and Dunai the 1960-70 decade was the wettest,whereas Rara,Dipal Gaun and Thirpu are wetter in the other decades rather than the latest one. The deviations show that 1991-00 seems to be the drier than other decades.Most of the cases the 2001-10 has the extreme breaks than the other decades. Among the stations Sheri Ghat and Guhtichaur seems to be the wettest of all.

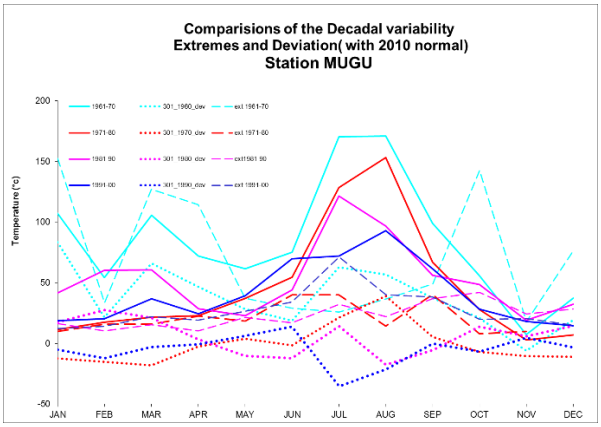


Fig 15

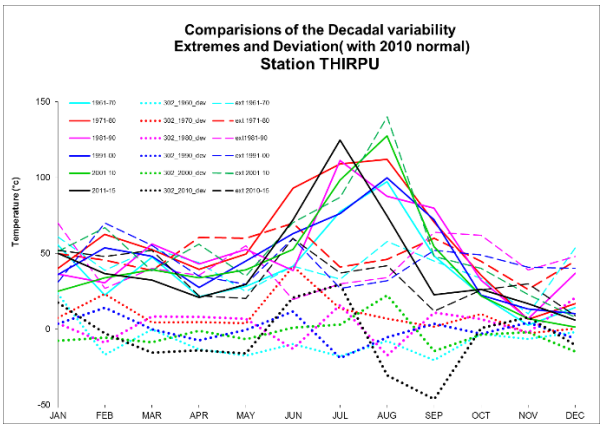


Fig 16

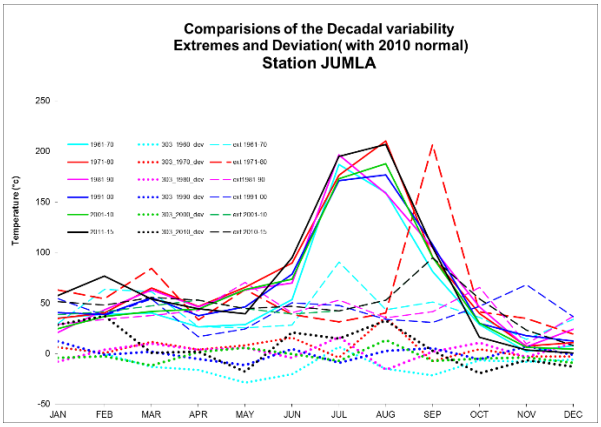


Fig 17

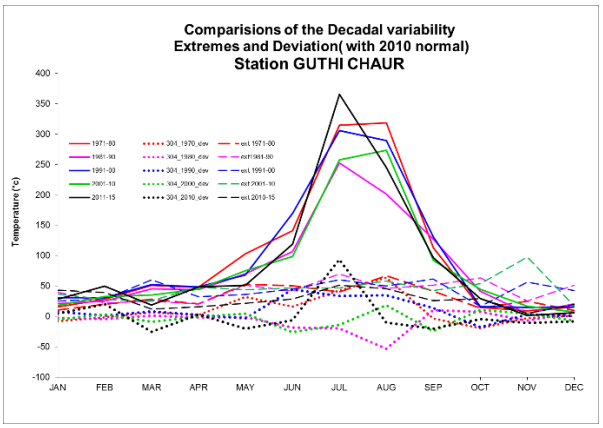
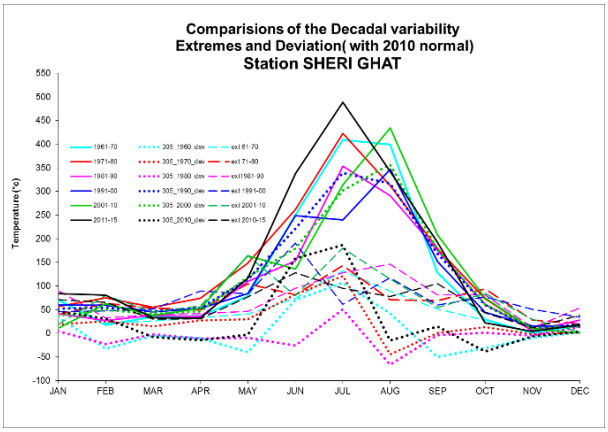


Fig 18



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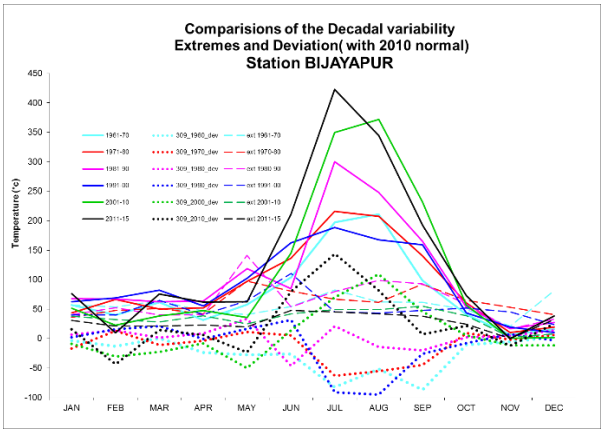

Fig 20

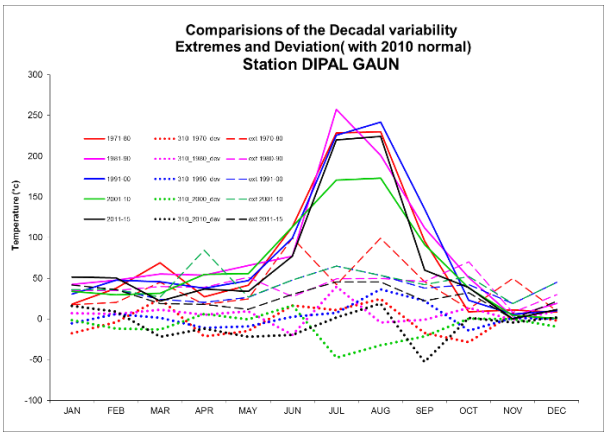

Fig 21

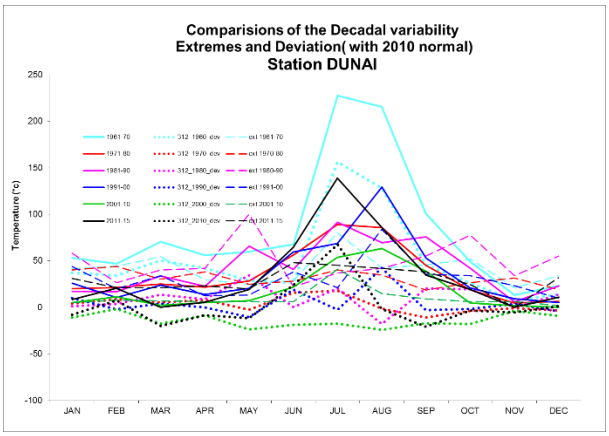

Fig 22

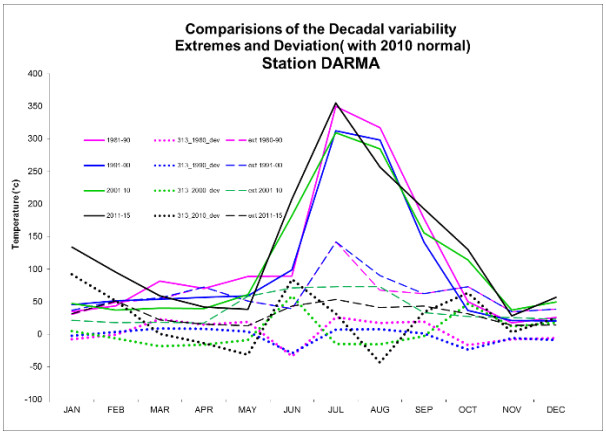

Fig 23

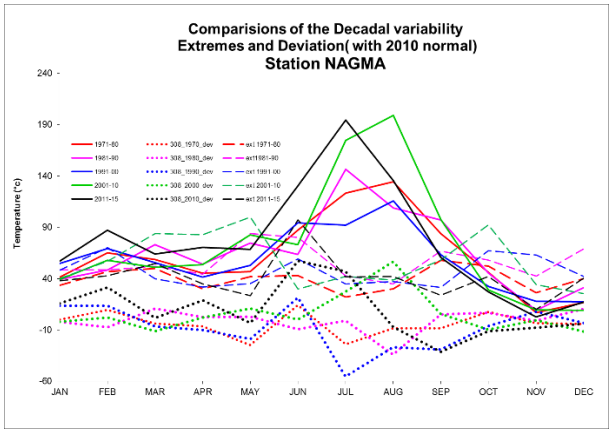

Fig 24

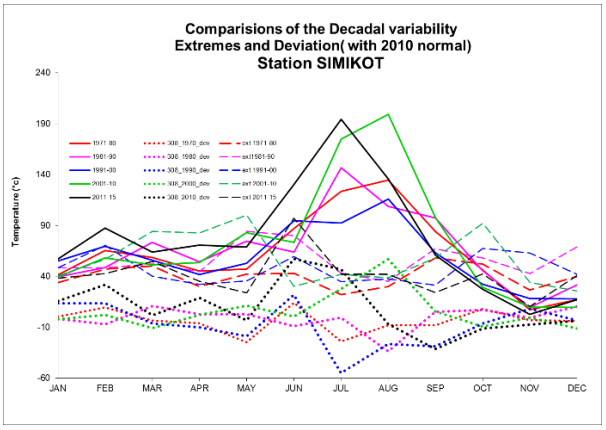

Fig 25

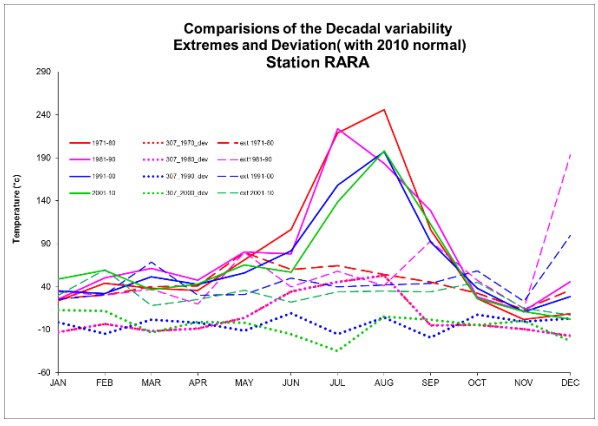

Fig 26

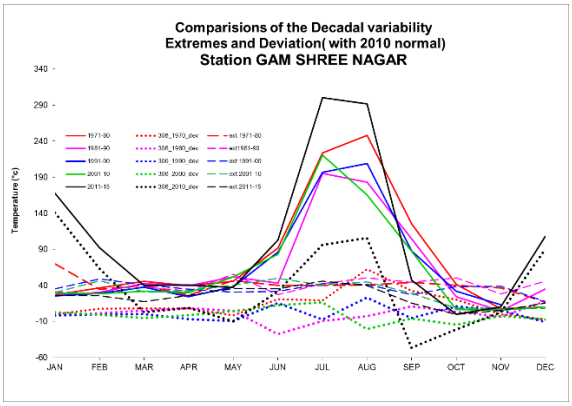

Fig 27

Conclusion:

This study shows that the temperature has been warming in the recent decade in the Karnali Anchal and the rainfall is lesser in this decade than the previous one. Karnali Anchal has the maximum rainfall at the station Sheri Ghat and the minimum at the Dunai and Thirpu. The warmest station was found to be Nagma with maximum of 32.2°C and the coldest was Simikot with minimum of -17.5°C . This shows the variability of the rainfall and temperature in the Karnali Anchal seems to be very high and this reveals the diverse and vast climatic variability of the area makes it one of the richest in the natural biodiversity.