



# Abu Dhabi Polytechnic

## Students' Graduation Project Abstract

<b>Department:</b>	Meteorology	<b>Semester:</b>	Spring-2022
<b>Project Title:</b>	Variability of Cloud cover and Height over UAE and their Association with ENSO Part-2		
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### Abstract:

Cloud cover plays an important role in earth's energy balance and climate systems of different locations on the earth. The cloud cover and its variations are also important in planning cloud seeding operations in a region. This project aims to study the mean Total Cloud Cover (TCC) variation and their association with ENSO on seasonal and annual time scales at six international airport stations, Abu Dhabi, Al Ain, Dubai, Sharjah, Fujairah and Ras al-Khaimah in the United Arab Emirates during 1990-2020. This study adds new information to promote artificial rain enhancement operations in UAE to tackle with the arid climate and lack of water resources in the country.

In an attempt to examine the association between the TCC in UAE and ENSO, correlation coefficients have been calculated between the mean seasonal and annual TCC at 6 selected stations with two ENSO indices (Nino3.4 SST and SOI) over the period of study. The mean autumn (SON) TCC at all the stations except Fujairah has consistently shown significant negative correlations with the previous seasonal Nino3.4 SSTs, showing stronger negative correlations with the previous winter (DJF) Nino3.4 SST. However, the annual TCC has shown significant negative correlations at only Abu Dhabi with DJF Nino3.4 SST and Al Ain with autumn (SON) Nino3.4 SST.

With SOI also, the mean autumn TCC at all the stations except Fujairah has shown significant positive correlations with the previous DJF SOI, while the mean annual TCC has not shown any significant correlations at all the 6 stations. Thus, the significant correlations with both Nino3.4 SST and SOI indicate a decrease in mean autumn TCC during El Nino (negative SOI) and an increase during La Nina (positive SOI) episodes.