ATOC 4550/5550 – Mountain Meteorology
Final Project
100 points

Design your own field campaign and write up an overview of the experimental design (about 5-10 pages total: text, figures, tables, maximum 12 pt font). You can use the information and ideas we have discussed in class to develop an idea for your experiment. Your project should be written as a paper, not just stand-alone answers to the questions (professional appearance/format is worth 10pts).

1. Choose a mountain or mountain range (target area) where you would like to place your experiment, provide some pictures (google maps) and describe the topography. (15pts)

2. Formulate 1-3 hypotheses/research questions which reflect the focus of your experiment (e.g., distribution of rainfall and/or snowfall, changes of diurnal wind system throughout the year, pollution concentration/dispersion, etc.); determine the time of the year and the duration of your experiment. (15pts)

3. Describe meteorological conditions (flow pattern, stability, blocking, sea-breeze circulation) based on terrain and surroundings that you would expect during your experiment. (20pts)

4. Based on the meteorological conditions, terrain, and research questions, which instruments would be best suited to address the research question. Please explain your choices. (15pts)

5. How would you deploy the instruments (number and kind of instrument) in your target area? Draw the location of the instruments on the google map that you provided in #1. (15pts)

6. Attached is a price list for a selection of instruments. Your budget is $2million. What adjustments would you make to #4 to meet the $2million budget? If the instrument you want to use is not on the list, just propose a reasonable cost for the instrument you want/need. (10pts)

Instrument costs

Aircraft operation	$100,000 per day
- airborne cloud radar	$10,000 per day
- airborne precipitation radar	$10,000 per day
- airborne lidar	$10,000 per day
- airborne in-situ measurements (temperature, pressure, wind)	$10,000 per day
Ground-based cloud radar	$50,000 per month
Ground-based precipitation radar	$50,000 per month
Ground-based wind lidar (horizontally scanning)	$50,000 per month
Ground-based radar wind profiler	$50,000 per month
Tower measurements (50 m tower with temperature, wind, humidity, pressure measurements every 10 m)	$25,000 per month
Microwave radiometer (vertical profile of temperature, humidity, liquid water content)	$25,000 per month
Ground-based sodar	$50,000 per month
Sounding system	$50,000 per month