Weather as Backdrop

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Storms and extreme rainfall can disrupt class schedules while lack of rain and extremely warm days can make for uncomfortable class atmosphere. All these need to be taken into consideration as part of decision making and strategic planning .

Specifically, there are 3 salient points regarding weather and its significance to the academic calendar:

(1) With respect to historical storm and rainfall data, there is no significant difference for the 1st semester in terms of weather. This is because either option (JUNE start or AUGUST start) will still cover August, September and part of October which are the months with the highest historical storm events and rainfall anomaly.

The 2nd semester fares better for the AUGUST start option since January-May have historically had lesser anomalies that November – March.

The "summer offering" fares better for the JUNE start option since it will avoid the "summer offering" in June-July – the months when rainfall are abundant.

DATA used : historical data for storms, rainfall, extreme rainfall events,
and extreme low precipitation events (figures 1, 2a&b, and 3)

(2) Using future projections of rainfall (2020 and 2050) UPD will be facing a wetter June, July, August and a substantial reduction of rainfall (i.e. drought) during March, April, May.

The question therefore is which scenario can UPD better handle. Wetter June, July , August translates to higher probability of suspension of classes for the JUNE start option unless most students and faculty are housed within campus. Drier March April, May does not necessarily translate to suspension of classes for the AUGUST start option, but UPD has to make structural measures that will assure adequate supply of water for all its needs – office, labs, food service, dorms, etc…

DATA used: A1B (HadCM3Q0) and A2 (ECHAM4) rainfall scenario projections of PAGASA (figure 4 and 5)

(3) Using historical air temperature, no significant difference is seen for the 1st semester between the 2 options. The difference lies in the tail end of the 2nd semester, since the highest average temp of Jan, Feb, March (JFM) is 27.0C (tail-end of the JUNE option) while the highest average temp of March, Apr, May (MAM) is 29.3C (tail-end of AUGUST option). It is interesting to note however, that the highest average temp of June, July, Aug (JJA) is 28.7C, only a historical 0.6C difference to the MAM (1950-1999).

A shorter but more recent time-series covering 1981-2010 shows the highest average temp of MAM to be 29.0C with an average peak high temperature at 34.4C. The average peak high temperature for JFM for 1981-2010 is 31.9C and for JJA is 32.1C

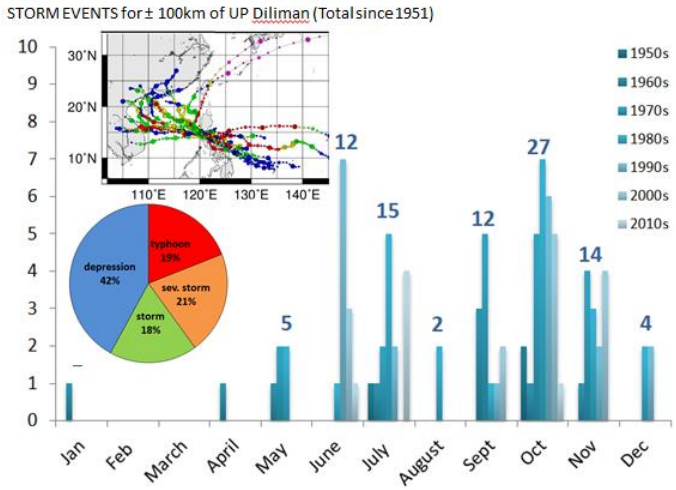
Overall, future projections show a relatively uniform increase of air temperature by 0.5-1.3C for the entire Philippines in 2020. So again, neither option has the advantage. One of the two 2050 projection of PAGASA (A1B (HadCM3Q0) however, shows a significantly warmer MAM. If this scenario becomes reality, UPD has to make structural measures (aircon, ceiling fans, green roofs, more trees near building windows, better ventilation, better insulation etc…) that will assure tolerable temperature for all its constituents if UPD will opt for an AUGUST opening – most especially for the classroom environment.

Alternatively, class hours can be adjusted to avoid the hottest hours of the day (11a.m. to 3 p.m.) and the use of the top floors can be avoided since these are the hottest rooms during the day.

DATA used: A1B (HadCM3Q0) temperature scenario projections of PAGASA (figure 6 and 7)

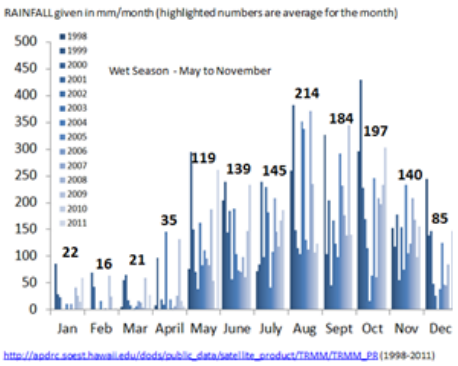
FIGURES:

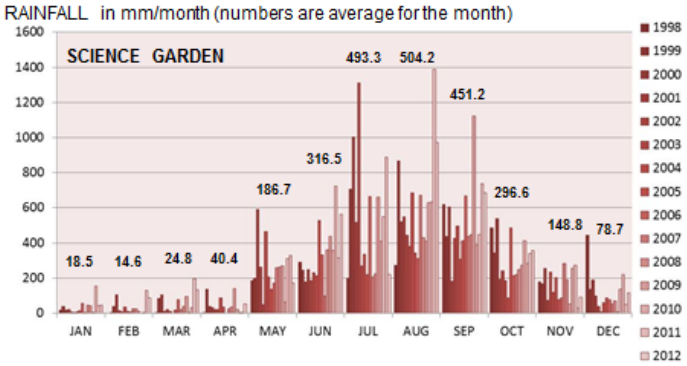
(1)_ Storm events 1951-2013 within 100 km of Diliman



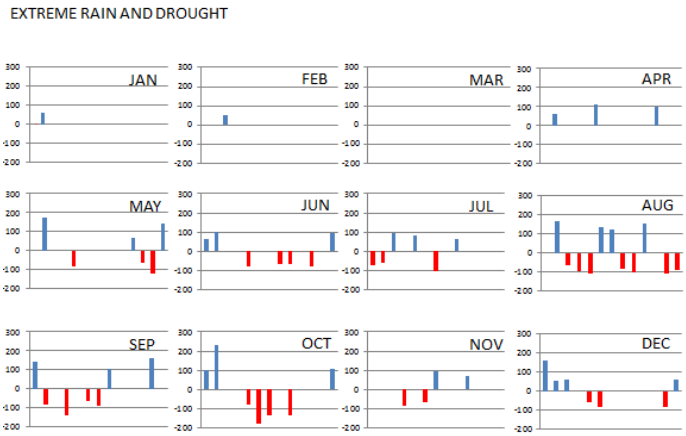
http://agora.ex.nii.ac.jp/digital-typhoon/search_geo.html.en (1951-2013)

(2)_(a) based on satellite data & (b) based on actual measurements from PAGASA



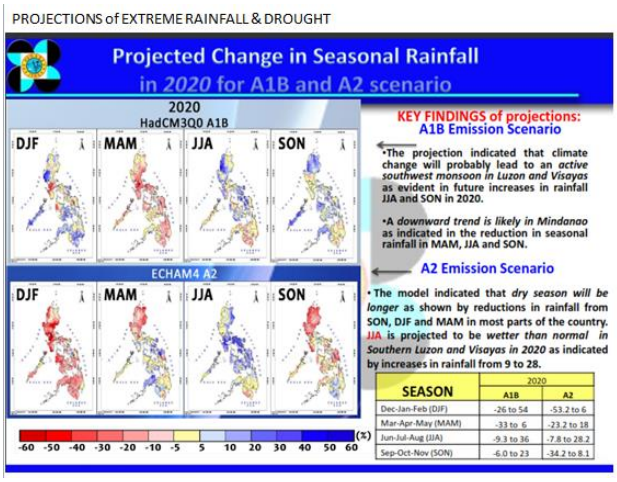


(3)_EXTREME HIGH (BLUE) AND LOW (RED) PRECIPITATION

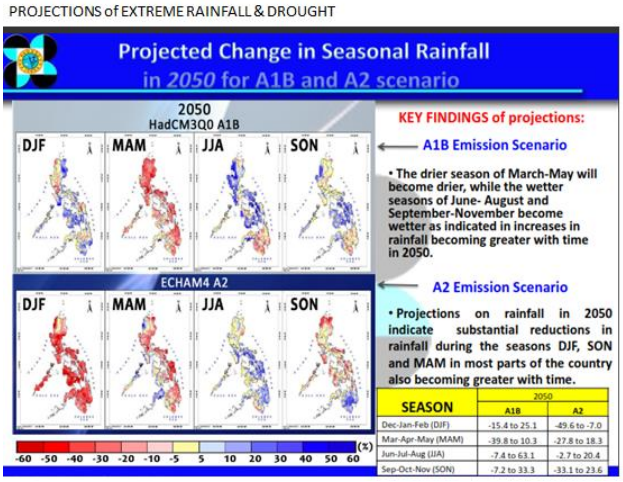


http://apdrc.soest.hawaii.edu/dods/public_data/satellite_product/TRMM/TRMM_PR (1998-2011)

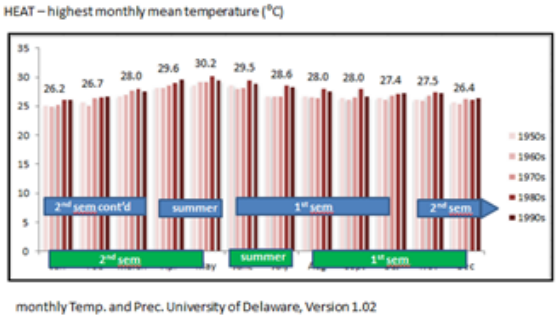
(4)_ Rainfall 2020

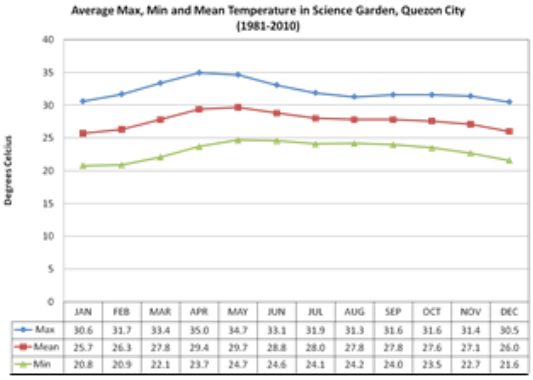


(5)_Rainfall 2050



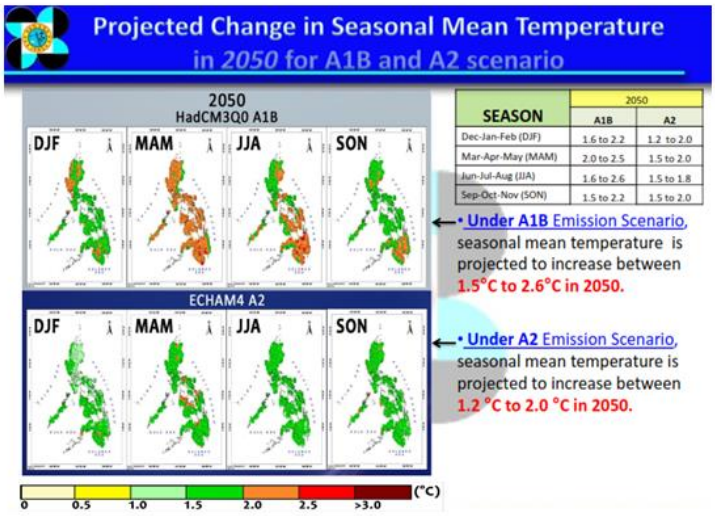
(6)_Monthly temperature (a) highest mean for 1950-1999; and
b)mean and min/max for 1981-2010





(7)_Temperature Change 2050

PROJECTIONS of TEMPERATURE CHANGE



SEASON	2050	
	A1B	A2
Dec-Jan-Feb (DJF)	1.6 to 2.2	1.2 to 2.0
Mar-Apr-May (MAM)	2.0 to 2.5	1.5 to 2.0
Jun-Jul-Aug (JJA)	1.6 to 2.6	1.5 to 1.8
Sep-Oct-Nov (SON)	1.5 to 2.2	1.5 to 2.0

- **Under A1B** Emission Scenario, seasonal mean temperature is projected to increase between **1.5°C to 2.6°C in 2050.**

- **Under A2** Emission Scenario, seasonal mean temperature is projected to increase between **1.2 °C to 2.0 °C in 2050.**