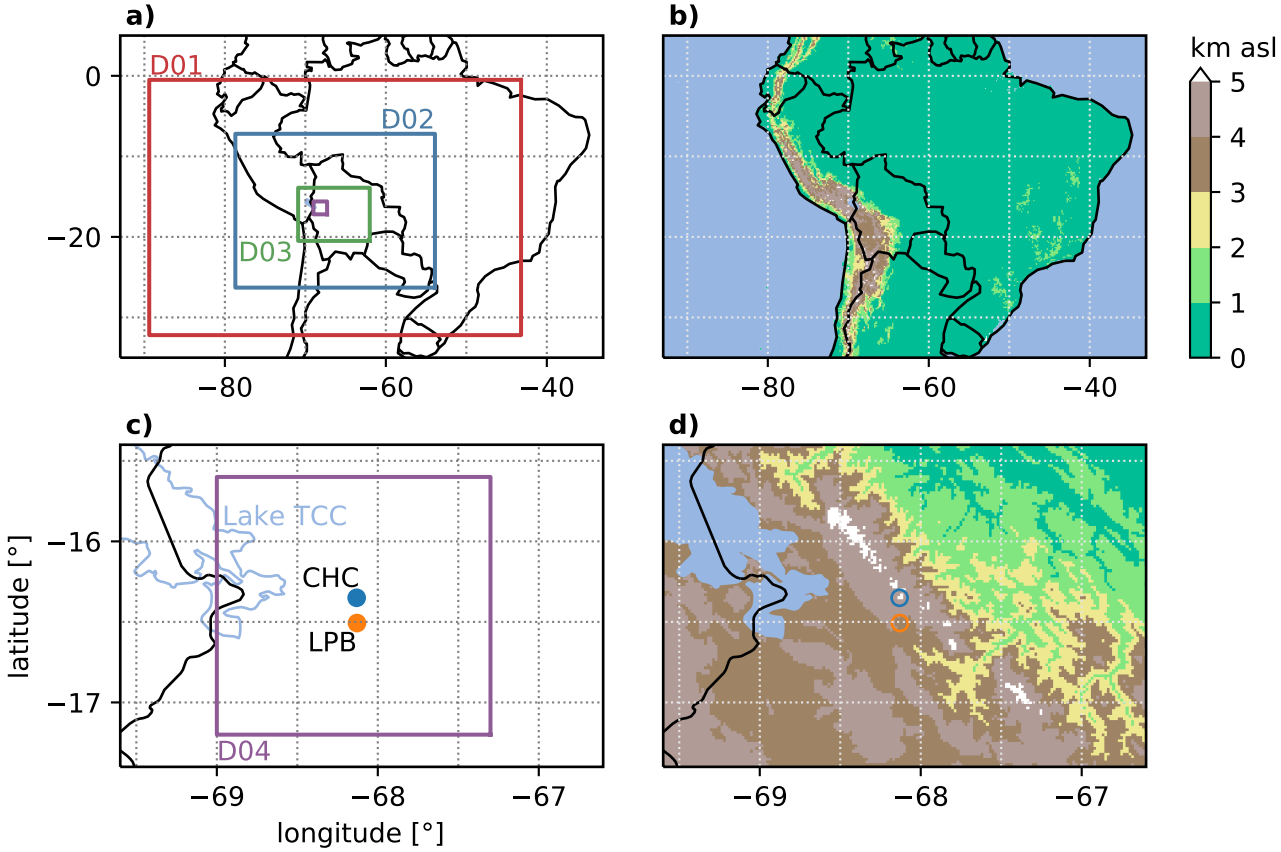

Figure 1: Description of the studied region. Panels a) and c) display the 4 nested domains used for the WRF simulation. Panel c) also includes the location of the Chacaltaya station (CHC, 5.2 km a.s.l.), La Paz City (LPB, 3.6 km a.s.l.) and Lake Titicaca (TCC, 3.9 km a.s.l.). Panels b) and d) show the elevation profile—in kilometers above sea level (km a.s.l.)—of the domain.

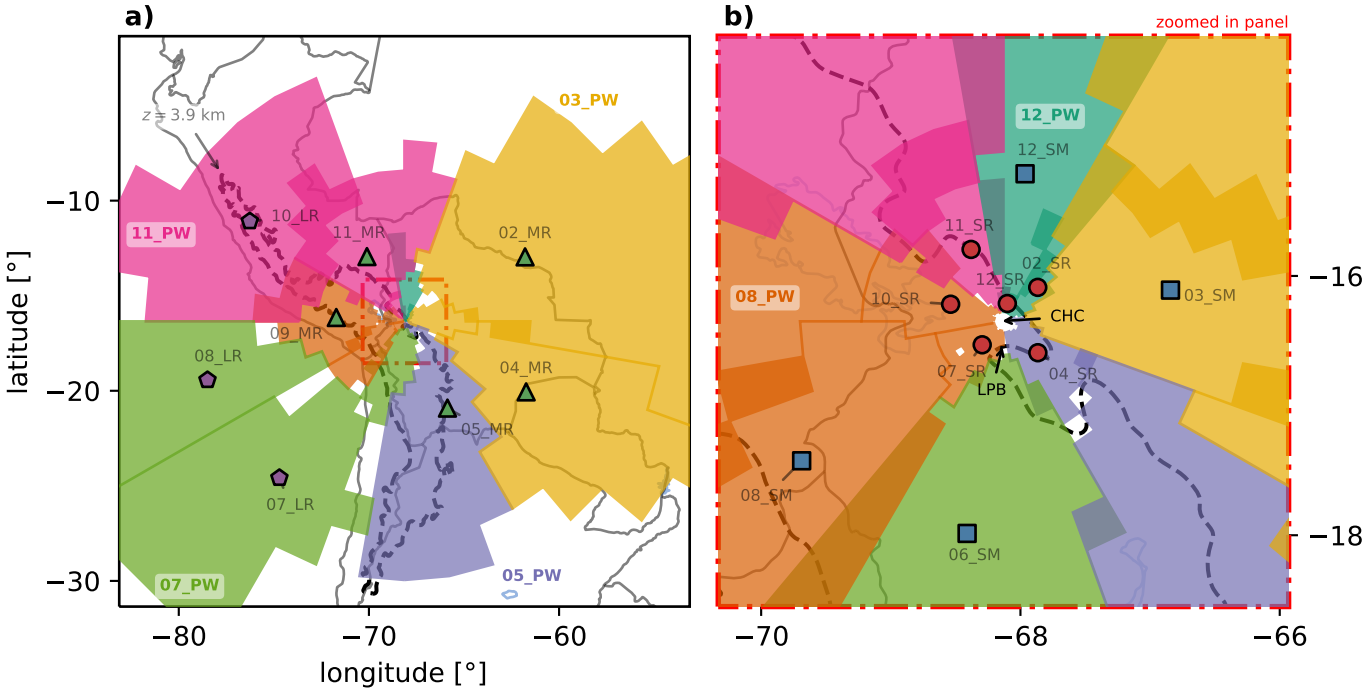

Figure 2: Horizontal location of the 18 clusters along with the main 6 pathways (PW). Each cluster centroid is marked with a disk (short range), square (short medium range), triangle (medium range), or pentagon (long range) locator. For each cluster we select cells that contain 80% of its SRR values during the modeling period. The color of each cluster is related to the main pathway they belong to: 03_PW (yellow), 05_PW (purple), 07_PW (green), 08_PW (orange), 11_PW (pink), and 12_PW (teal). The dashed black line corresponds to a height of 3.9 km a.s.l. and delimitates the Altiplano plateau. Panel b) corresponds to the region inside the red rectangle in panel a). The city of La Paz (panel b)) is located in the intersection of clusters 07_SR and 04_SR. The first cluster contains the part of the city that is located in the Altiplano plateau and the latter the section located in the valley.

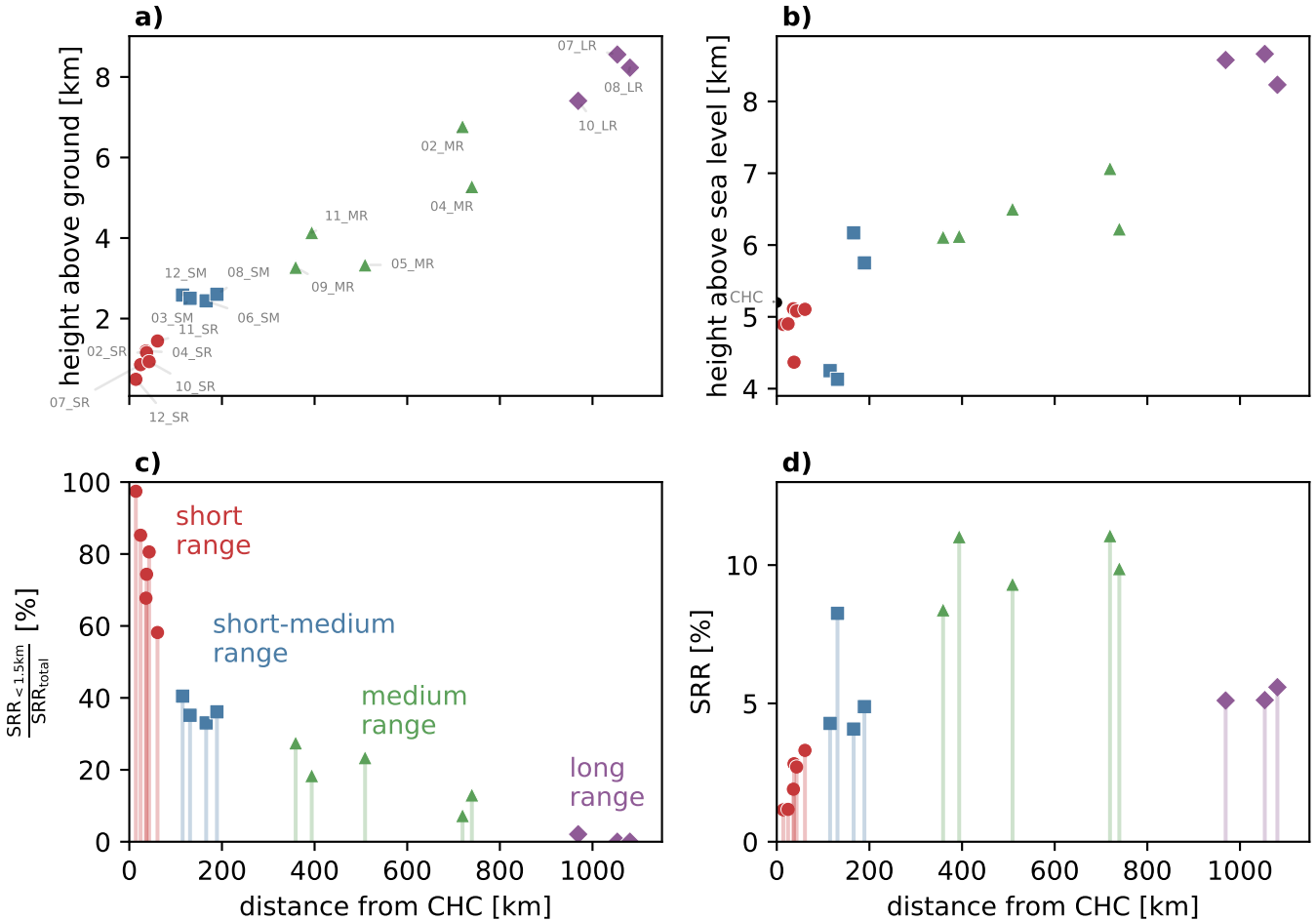

Figure 3: Cluster median properties for each cluster. The x axis for all panels represents the radial distance from CHC. Panel a) shows the median height above ground level of each cluster while panel b) portrays the height above sea level. Panel c) show the ratio between the SRR values that are below 1.5 km above ground level and the total SRR value for each cluster. Finally, panel d) shows the median SRR percentage for each cluster.

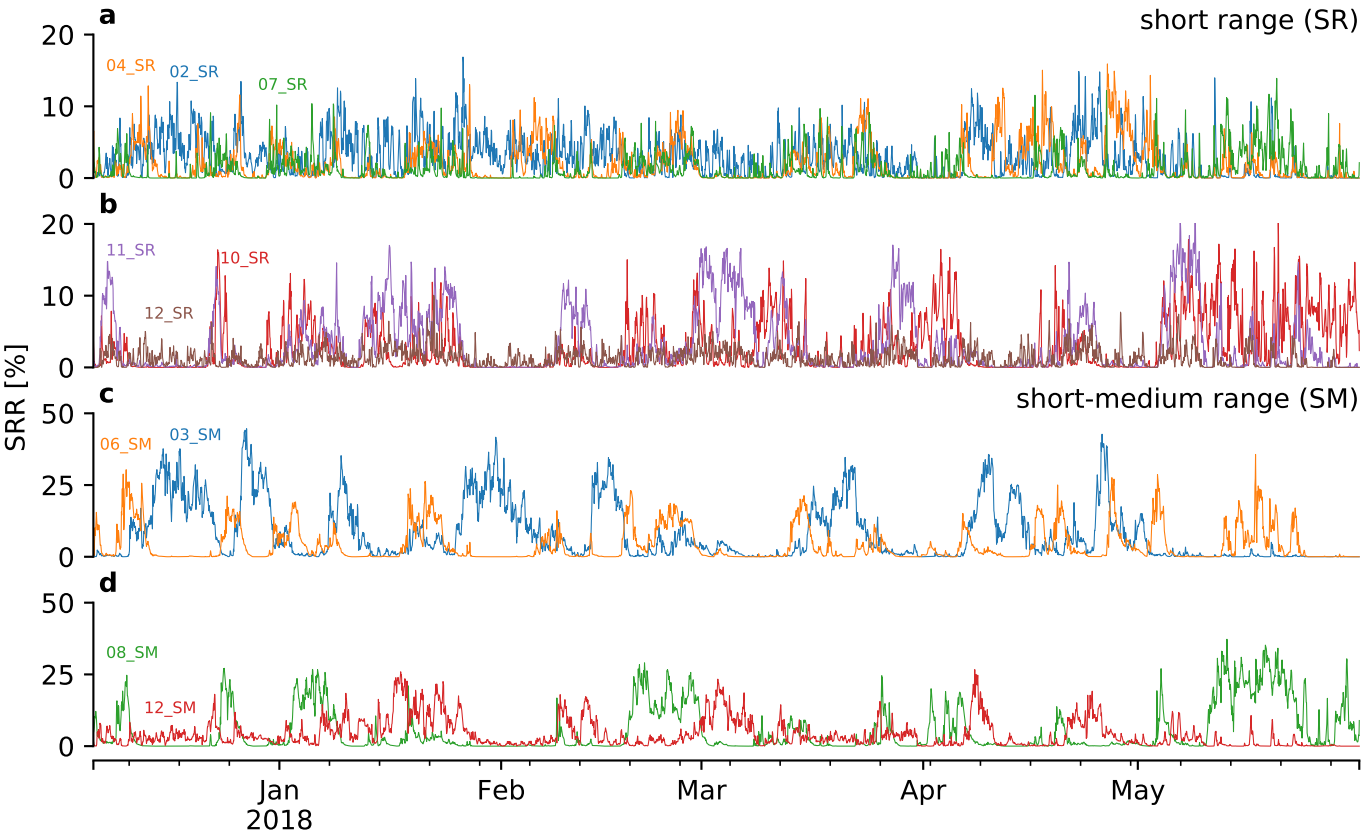

Figure 4: Time series of the SRR [%] cluster influence. Panels a and b show the short range (SR) clusters. Panels c and d display the short-medium range (SM) clusters. The diurnal variation is evident in the SR. The SM varies on a 3-4 day scale.

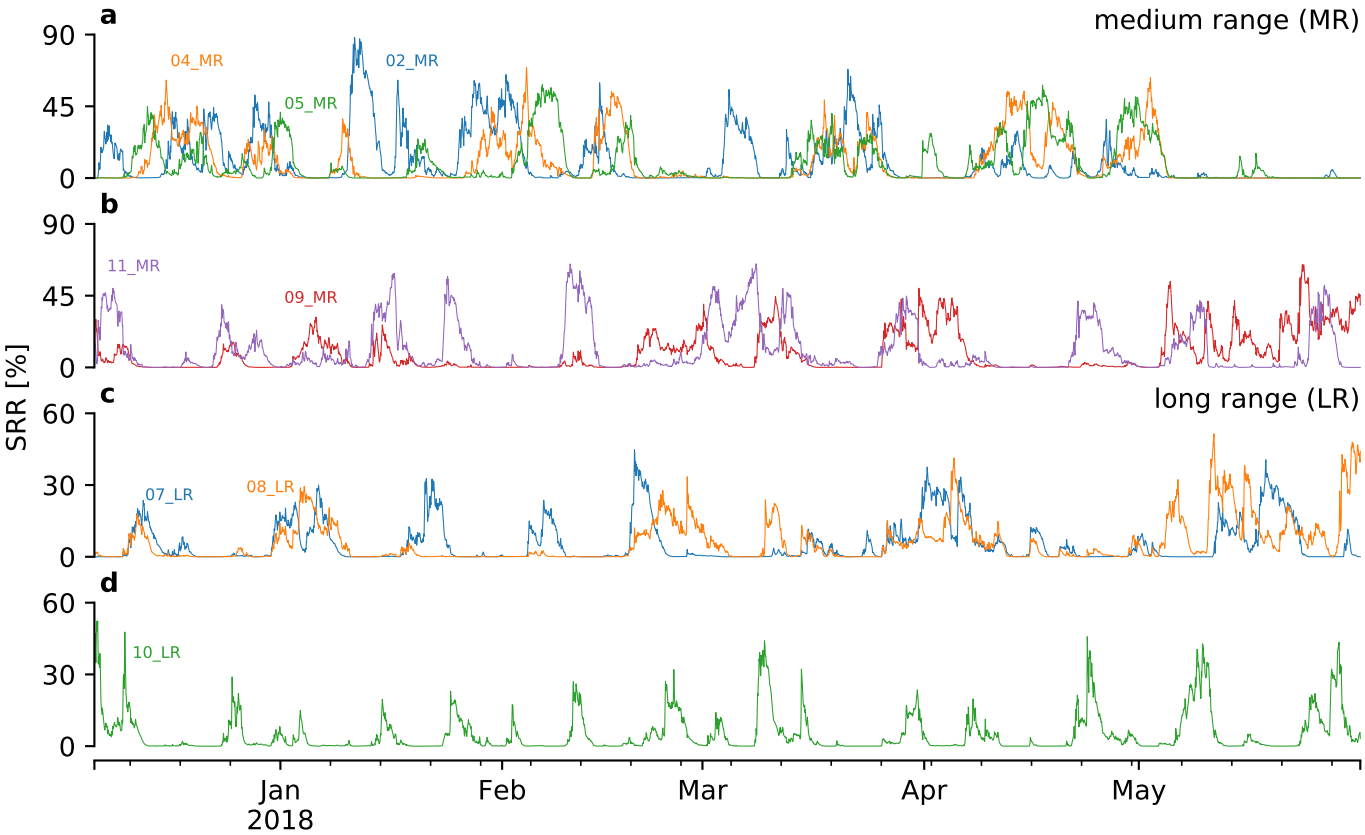

Figure 5: Time series of the SRR [%] cluster influence (similar to fig. 4). Panels a and b show the medium range (MR) clusters. Panels c and d display the long range (LR) clusters. Both the MR and the LR vary on a weekly scale.