DATA: Ground Tilt

The map below shows the locations of the tiltmeters (red triangles) on the summit (Kilauea caldera) and Pu‘u ‘Ō‘ō.

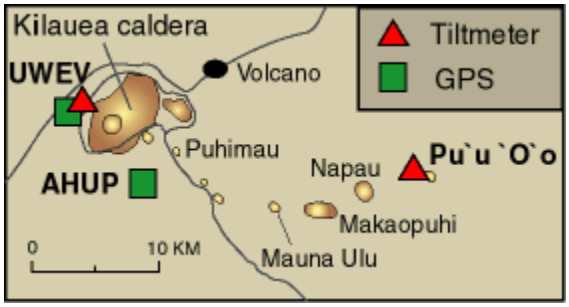


Image from: USGS Hawaiian Volcano Observatory
(http://hvo.wr.usgs.gov/kilauea/update/deformation.html)

The graph below shows data from the tiltmeters on the summit and on Pu‘u ‘Ō‘ō together over a one week period in 2010.

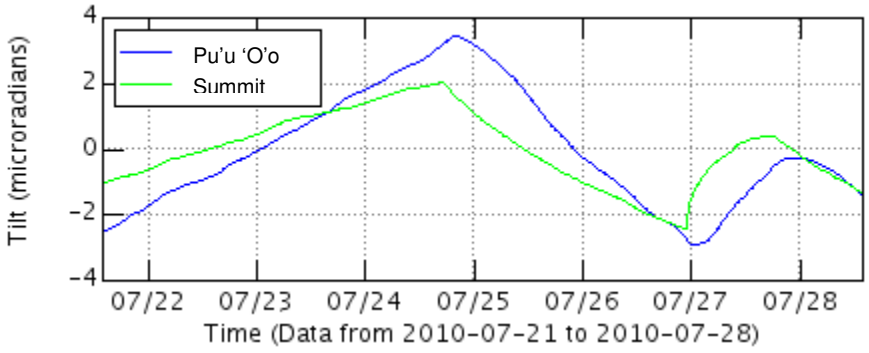
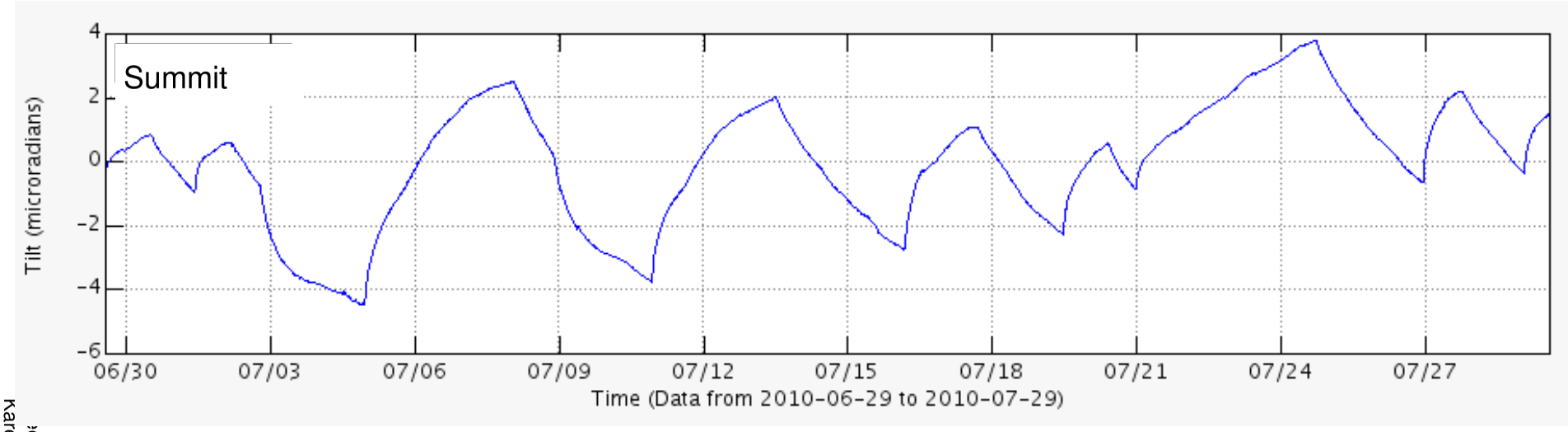
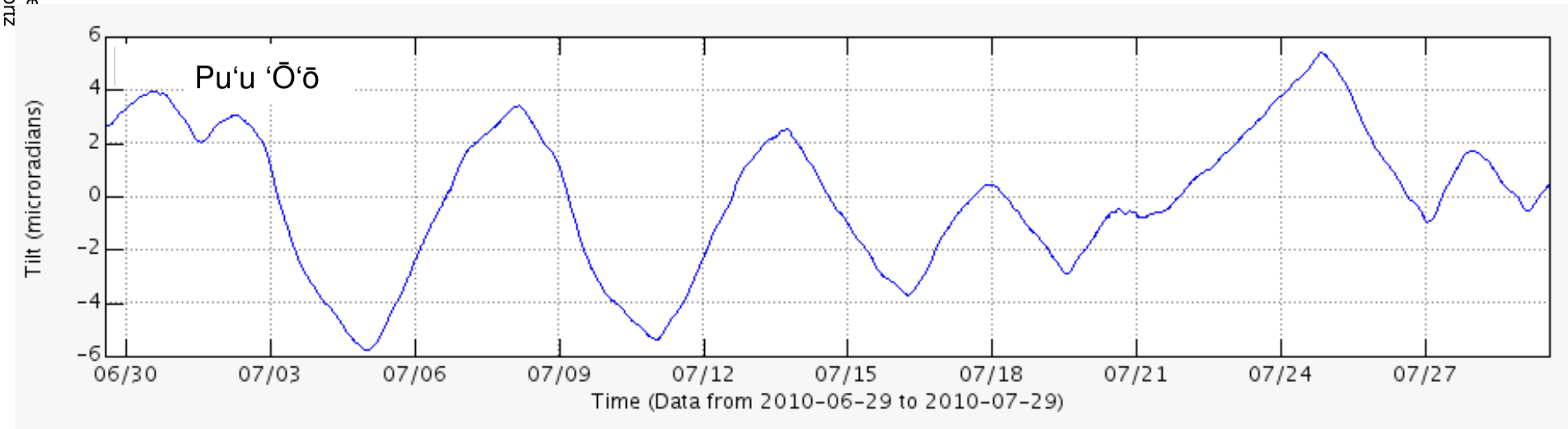


Image modified from: USGS Hawaiian Volcano Observatory
(http://hvo.wr.usgs.gov/kilauea/update/deformation.html)

The graphs on the following pages show data from the tiltmeter on the summit and on Pu‘u ‘Ō‘ō over a one month period in 2010. The data are from the USGS Volcanoes Exploration Program: Pu‘u ‘Ō‘ō (https://vepp.wr.usgs.gov).

Ground Tilt



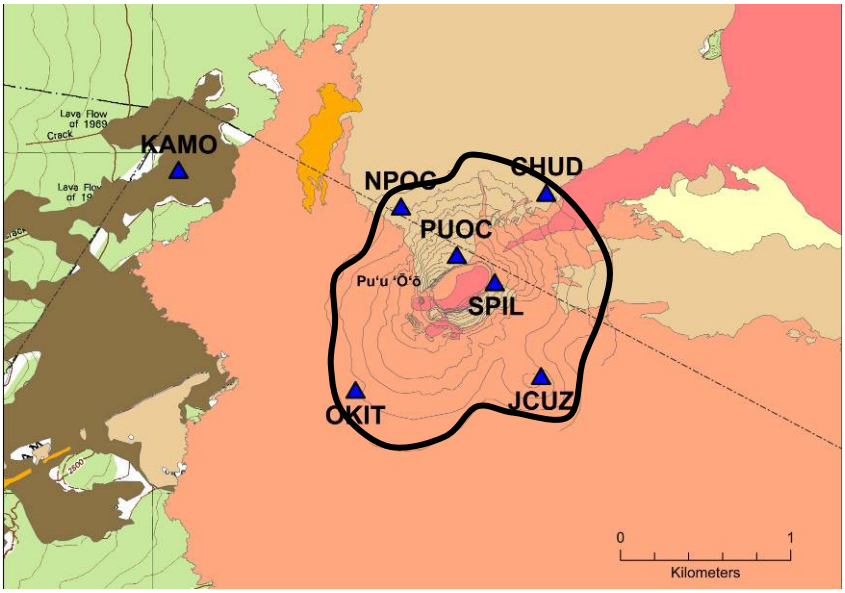


Karen Korz

The data are from the USGS Volcanoes Exploration Program: Pu‘u ‘Ō‘ō (https://vepp.wr.usgs.gov)

DATA: Ground Movement (Using GPS)

The map below shows the locations of the GPS stations (blue triangles) on Pu‘u ‘Ō‘ō. The map is focused on Pu‘u ‘Ō‘ō and the colors on the map correspond to lava flow ages, with anything pink indicating lava flows younger than 1983. The black line indicates the approximate edge of the Pu‘u ‘Ō‘ō cone. The data in the graph show the distances between the PUOC and SPIL stations.



Modified from https://vepp.wr.usgs.gov/vepp/techniques/gps/

The map below shows the locations of the GPS stations (green squares) on the summit (Kilauea caldera). The data in the graph show the distances between the UWEV and AHUP stations.

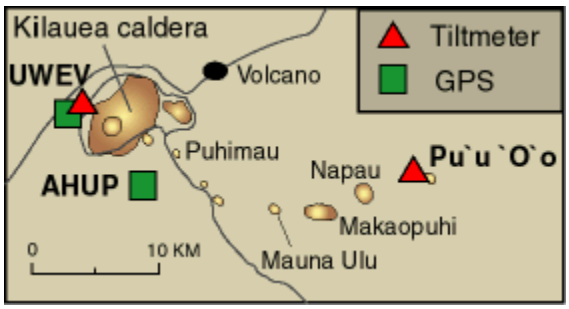
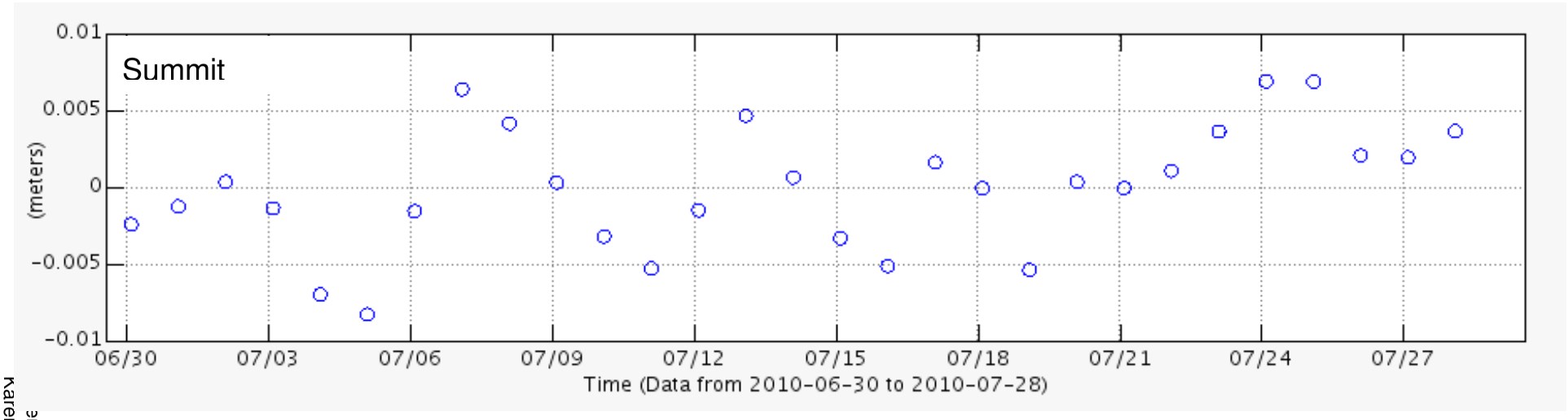


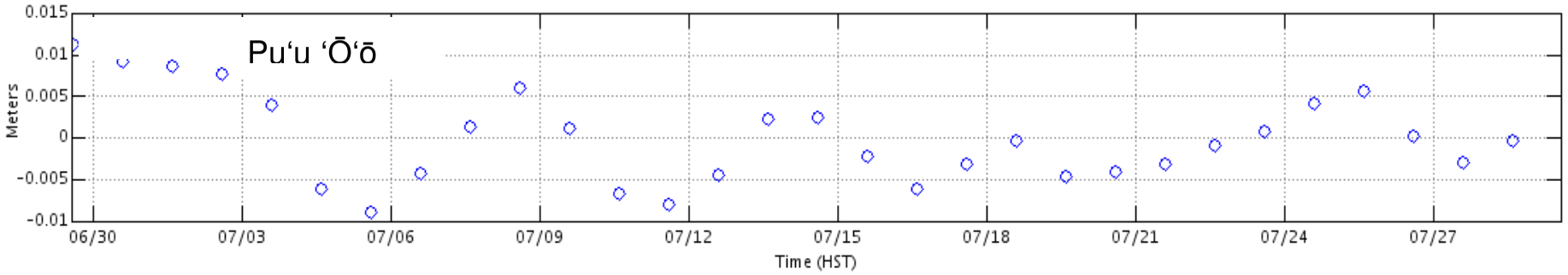
Image from: USGS Hawaiian Volcano Observatory
(http://hvo.wr.usgs.gov/kilauea/update/deformation.html)

The graphs on the following page show the distance between two GPS stations on the summit and on Pu‘u ‘Ō‘ō over the same one month period in 2010 as the ground tilt data. Note that each point is the average of the motion over an entire day. Positive numbers indicate the stations are getting further apart and negative numbers indicate they are getting closer together. The data are from the USGS Volcanoes Exploration Program: Pu‘u ‘Ō‘ō (https://vepp.wr.usgs.gov).

Ground Movement Using GPS



Karen Kortz



The data are from the USGS Volcanoes Exploration Program: Pu‘u ‘Ō‘ō (https://vepp.wr.usgs.gov)

DATA: Lava Composition

The composition of the major elements for the summit, Pu‘u ‘Ō‘ō, and the Galapagos are given below. The most recent eruption for the summit is given as well as one of the earlier eruptions at Pu‘u ‘Ō‘ō during the current eruptive event. For comparison, data from another hot spot style volcano (Fernandina on the Galapagos Islands) is included. Additional comparisons can be made with the composition data given in the prior composition section.

	Summit (1982)[1]	Pu‘u ‘Ō‘ō (1985-86)[2]	Fernandina Galapagos (2007)[3]
SiO_2	50.1%	50.2%	48.5%
Al_2O_3	13.1%	13.3%	14.9%
Fe_2O_3	12.2%	11.9%	11.3%
CaO	11.0%	11.1%	11.5%
MgO	7.9%	7.5%	6.7%
TiO_2	2.5%	2.5%	3.1%
Na_2O	2.2%	2.2%	2.8%
K_2O	0.5%	0.5%	0.4%
Other	0.5%	0.8%	0.8%

[1] Data from: Pietruszka, A. J. & Garcia, M. O. (1999). A rapid fluctuation in the mantle source and melting history of Kilauea Volcano inferred from the geochemistry of its historical summit lavas (1790-1982). Journal of Petrology 48(8), 1321-1342.

[2] Data from: Greene, A. R., Garcia, M. O. & Orr, T. (2009). Time-series analysis of the Pu‘u ‘Ō‘ō-Kupaianaha eruption (1983-2009), Kīlauea Volcano, Hawai‘i: Crustal processes. Science Education Resource Center (SERC) at Carleton College. http://serc.carleton.edu/NAGTWorkshops/petrology/teaching_examples/35081.html.

[3] Data from: Dennis Geist, University of Idaho, personal communication, July 29, 2010.