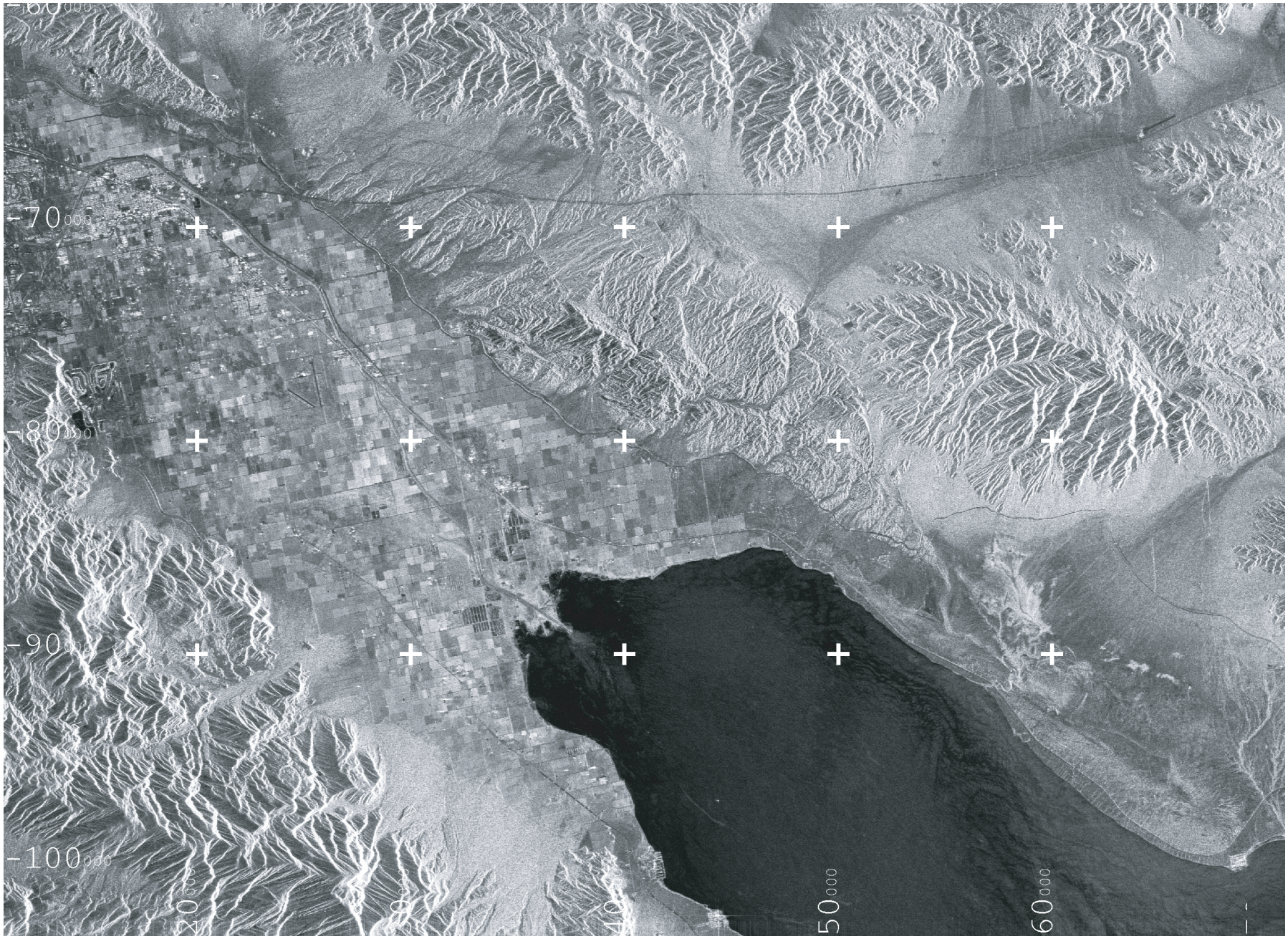
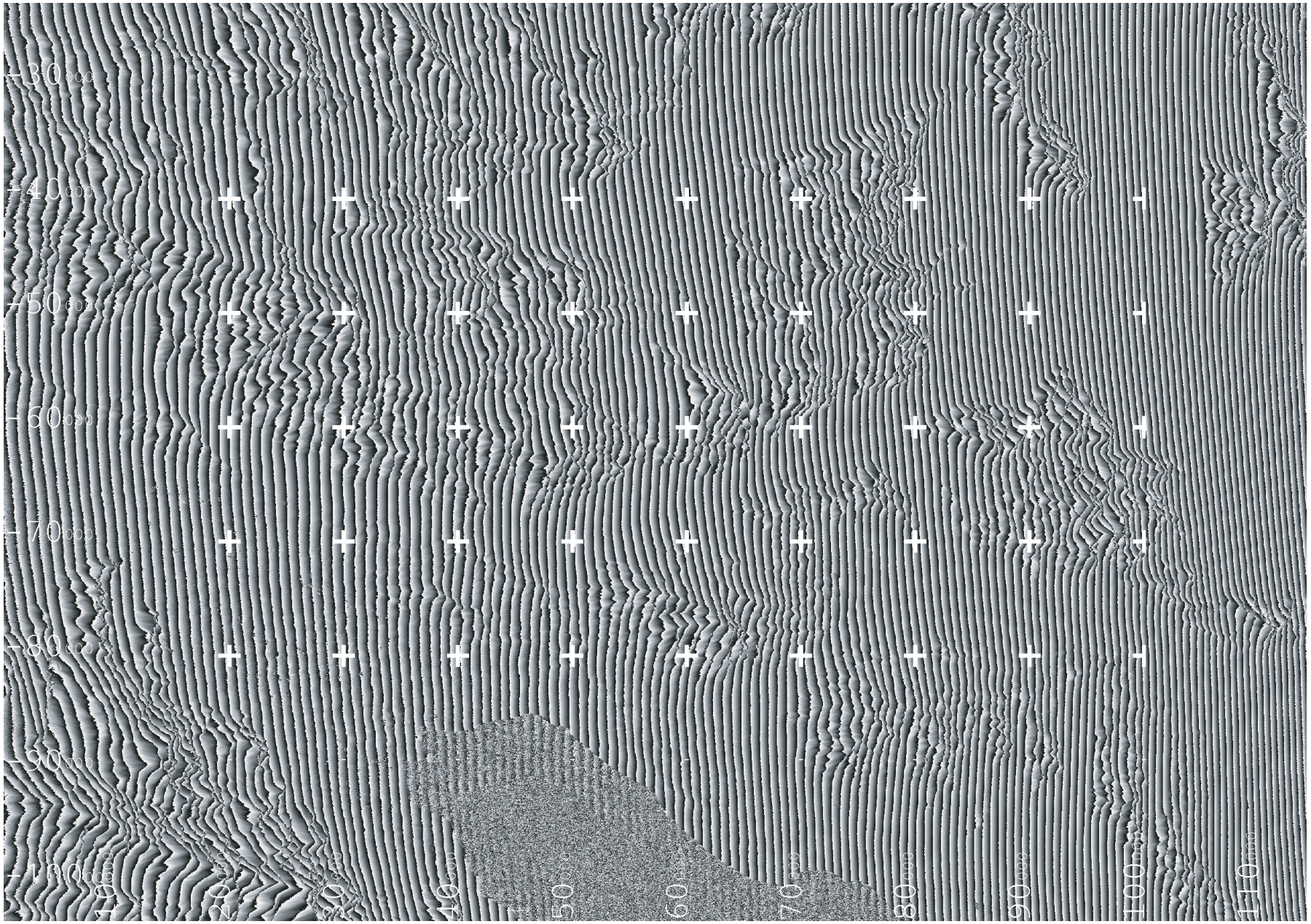
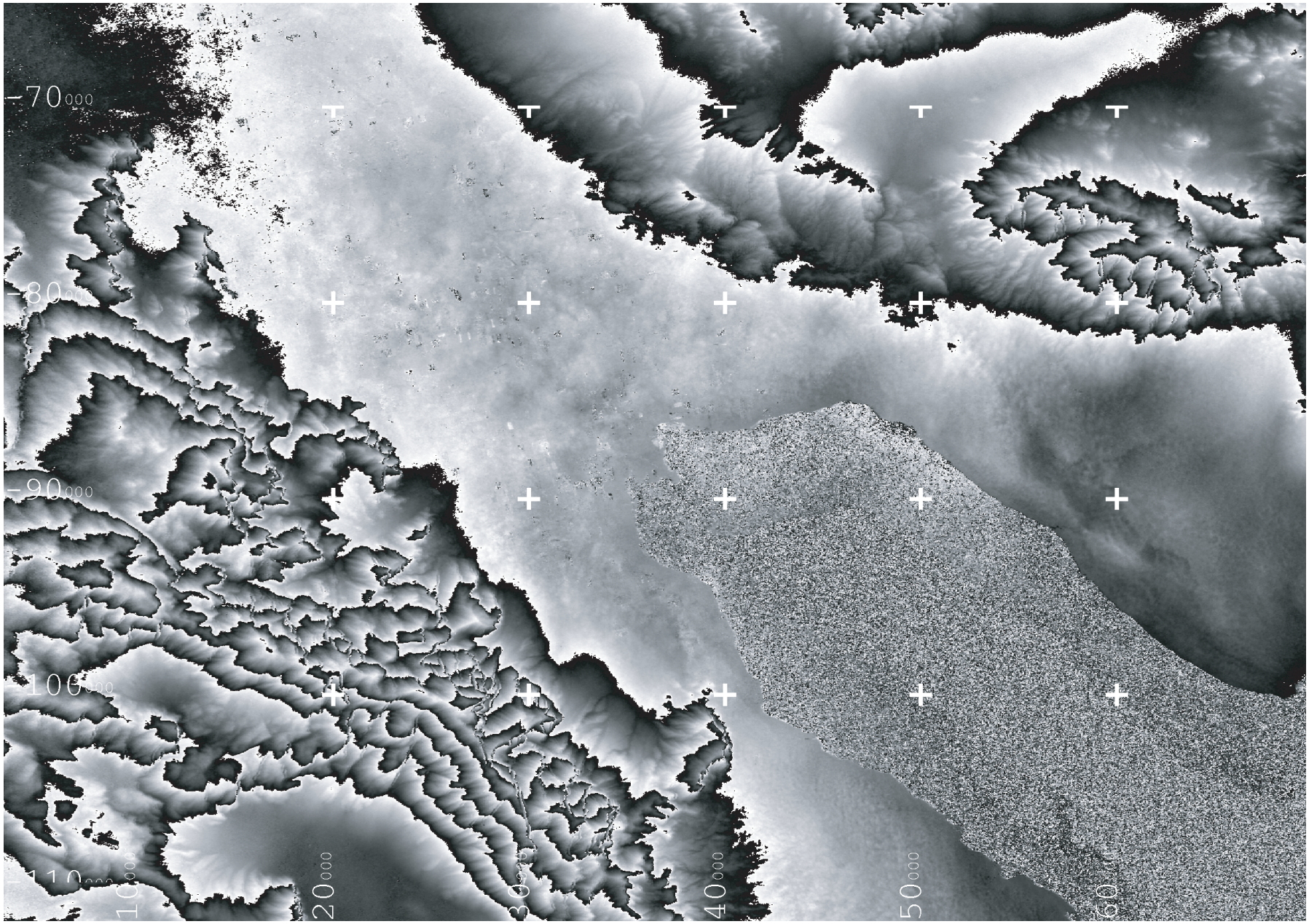


1) This is an image of radar backscatter from a stack of ERS SAR data. The flight path is top to bottom and the radar looks from the right. The area is the Salton Sea and Cochella Valley, and the tic marks are spaced at 10 km. The satellite is 7159717m from the center of the Earth, the local Earth radius is 6371593 m, and the range to the center of the image is 850148 m. Calculate the look angle to the center of the image. Identify areas of layover. What is the minimum mountain slope in the areas of layover? Why is the Salton Sea dark?

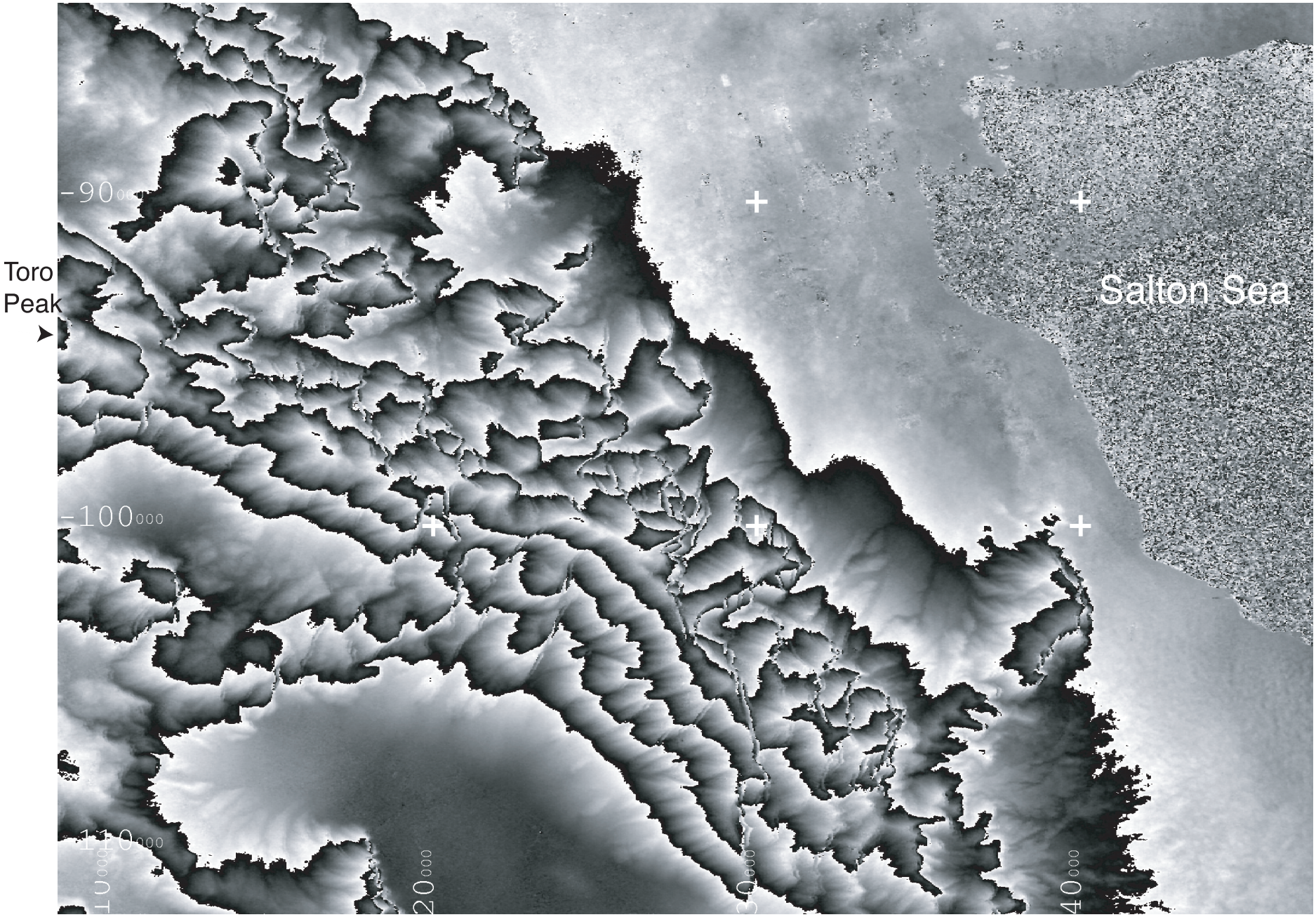
2) This is a zoom of the previous image with 5 km tic marks. Use a map to identify each of the three curved lines running through the images. Why do the fields have different backscatter? Why aren't the fields exactly square? Why do the bright spots have cross patterns?



3) This is an interferogram made from ERS SAR data. One fringe represents 2 π phase change between the reference and repeat SAR acquisition. Count the fringes across the image and calculate the perpendicular baseline. You will need the look angle from the previous problem. The total change in slant range across the image is 50 km. Why does the fringe rate vary slightly across the image?



4) Interferogram with fringes due to geometry and Earth curvature removed. What are the cause(s) of the residual fringes? Why is the phase along the shoreline of the Salton Sea not exactly constant? (there are several possibilities).



5) This is a zoom of the previous interferogram. Estimate the height difference between Toro Peak and the Salton Sea. Identify areas of layover?