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Early spring evolution of the Giza and Inca City regions as observed by the High Resolution Imaging Science Experiment over two Martian years

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The Martian South Polar Regions which are covered by a CO2 layer during winter, become in spring a place for exotic activity and a place of CO2, water ice and dust interplay. Dark and bright fans have been observed. They are associated with araneiform (spider-like) structures and are believed to be deposits from jets which arise from pressure produced below translucent CO2 slab ice. The High Resolution Imaging Science Experiment (HiRISE) has imaged the southern polar terrain in unprecedented detail throughout local spring of Martian year 28. At the moment (beginning of 2009) a similar observational campaign for the southern spring of Martian year 29 is being conducted. We will present HiRISE observations for two chosen locations that exhibit jet activity – the Giza region (-84.8, 65.7E) and Inca City (-81.3, 295.8E) – and compare their early spring evolution. Although these two areas are situated at similar latitudes, they lie on opposite sides of the South Pole and are topographically quite different: Giza occupies a relatively flat area, while Inca City possesses a distinctive set of orthogonal ridges. The most important difference is the relation of these regions to the cryptic terrain. OMEGA observations suggest Inca City lies completely outside the cryptic terrain, while Giza is inside the early cryptic region (at Ls=220 deg-230 deg). Similarities and differences in the evolution of these areas will be discussed on the basis of models of processes involving translucent CO2 ice.