CAPTIONS FOR PHOTOS 1 – 6

Photo 1. Pepuarta Tillite in the Olary region, showing a dropstone boulder of granite 32 cm across in laminated siltstone. Vertical section. Photograph by courtesy of Bryan Forbes.

Photo 2. Vertical section of basal diamictite of the late Cryogenian Elatina Formation, Central Flinders Zone of the Adelaide Geosyncline. A boulder of granite gneiss 68 cm long has been forced into the preglacial Yaltipena Formation (top shown by arrow), which is buckled on the right. Trezona Bore section, Flinders Ranges (Lemon & Gostin 1990; Williams et al. 2008). Hammer 33 cm long.

Photo 3. Plan view of low-dipping diamictite near the top of the late Cryogenian Elatina Formation, Central Flinders Zone of the Adelaide Geosyncline. Basalt clasts are set in a matrix of red brown silty mudstone. Trezona Bore section, Flinders Ranges (Lemon & Gostin 1990; Williams et al. 2008). Scale 15 cm.

Photo 4. Glacially faceted cobble of basalt showing three different sets of striations aligned with the long axis of the clast, from glaciomarine diamictite at the top of the Elatina Formation in Enorama Creek, Flinders Ranges (Central Flinders Zone of the Adelaide Geosyncline). Scale 2 cm. From Williams & Schmidt (2000). Numerous striated clasts of basalt found in this topmost diamictite were derived by glacial erosion of basalt rafts in nearby emergent diapiric islands (Lemon & Gostin 1990; Williams 2008; Williams et al. 2008).

Photo 5. Three generations of late Cryogenian periglacial primary sand-wedges exposed in vertical section of a permafrost regolith of frost-shattered Mesoproterozoic quartzite (Cattle Grid Breccia) in the Cattle Grid open pit near Mount Gunson, Stuart Shelf, South Australia. The large wedge (2) is 3 m deep and contains steeply dipping laminae of coarse-grained sandstone. The top of the wedge is truncated so originally the wedge exceeded 3 m in depth; the width shown here may be apparent and greater than the true width. Two deformed sand wedges of an earlier generation (1) occur within the breccia. A thirdgeneration sand wedge (3) occurs in the upper part of the large wedge and in the overlying flat-bedded periglacial–aeolian Whyalla Sandstone. Breccia and sandstone are upturned next to the wedges. Episodes of destabilization and erosion of the upper part of the permafrost occurred between the development of each generation of wedges, indicating climate cycles on a kyr time-scale. These sand wedges are comparable in dimensions, structure and internal fabric with V-shaped primary sand-wedges forming today in rubble produced by frost action on bedrock in the dry valleys of Antarctica. From Williams & Tonkin (1985).

Photo 6. Vertical section showing the Ediacaran GSSP in Enorama Creek, Flinders Ranges (Central Flinders Zone of the Adelaide Geosyncline), South Australia. The Golden Spike, a circular brass plaque 9 cm in diameter (at centre right), appears to be placed within a conformable succession below prominent dolostone beds of the Nuccaleena Formation. The base of the Nuccaleena Formation and the Wilpena Group may be better placed below a 20–30 cm thick bed of pale red sandstone (base marked by arrow, c. 10 cm below the 15 cm scale), which marks a possible sequence boundary between the sandstone and a bed of red siltstone at the top of the

Elatina Formation (Williams et al. 2008). The pale red sandstone bed may be a local manifestation of the basal Ediacaran Seacliff Sandstone.