SBA Report
July 15, 2008
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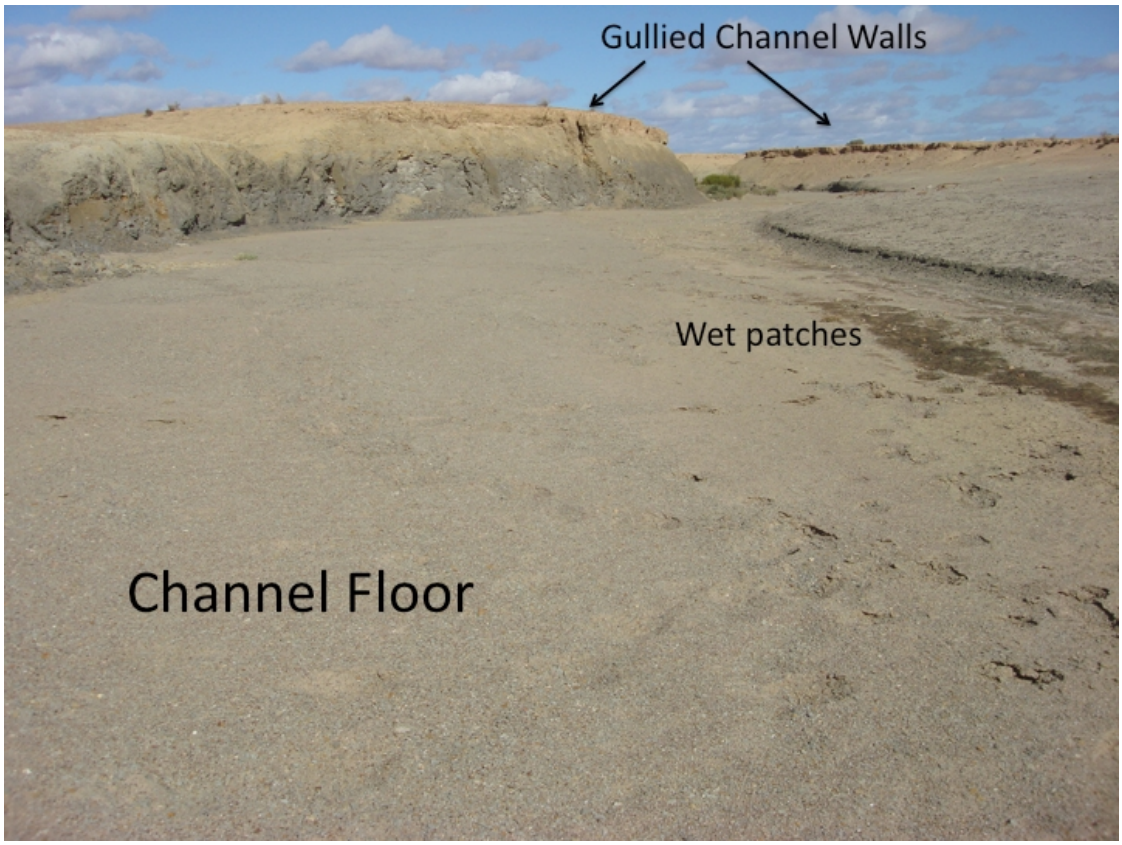
Visit to Reedy Springs

Today's venture for the Spaceward Bound Australia crew began at the town of Lyndhurst and was a drive several hours into the desert to explore the Reedy Springs site. This trip represented true exploration as no one on the excursion had ever visited this site before and thus we did a bit of searching for the springs. After several attempts at a few sites, we did find the wonderful Reedy Springs. Once in the general vicinity of the site, the advantage of having the entire Spaceward Bound team on-site was demonstrated as the crew fanned out over the site to find the most scientifically interesting areas. The team of scientists and teachers was quite effective at covering several square kilometers and exploring this unique site. Four unique types of water activity were discovered including a 1) Valley Channel, 2) Seeping Springs, 3) Spring Outlet Pool, and 4) Mound Stream.

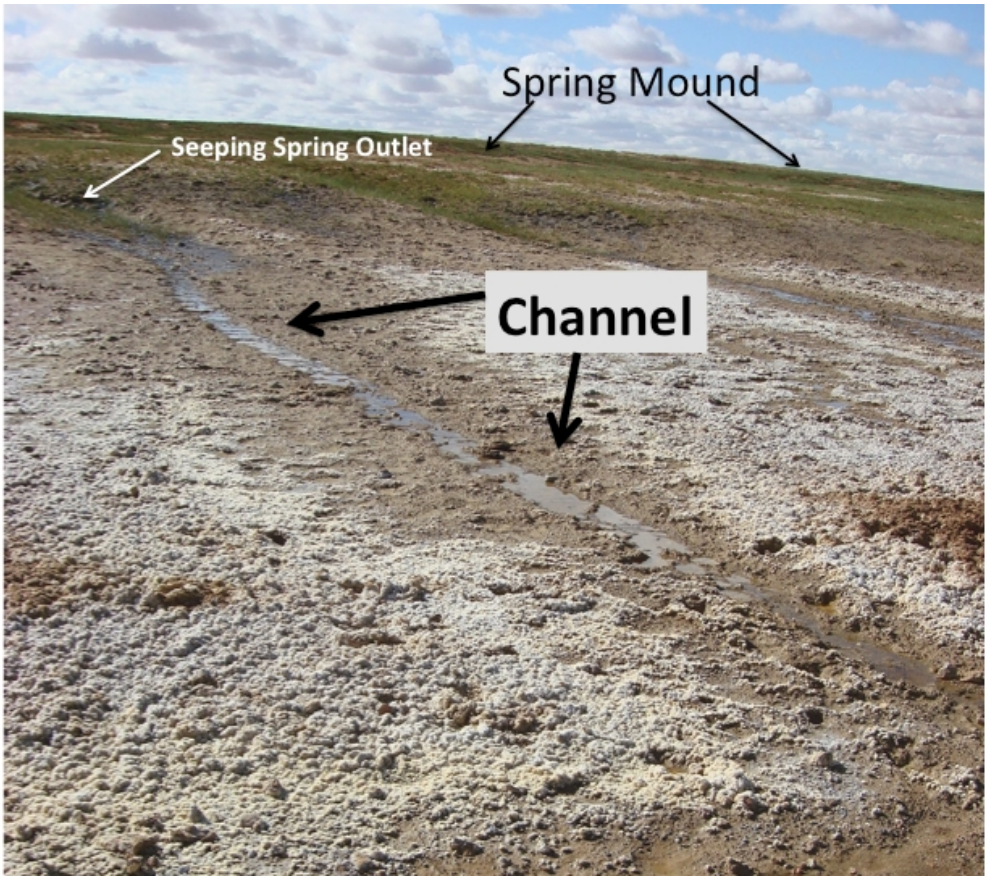
Valley Channel

The first region explored was a large valley channel with multiple patches of wet and muddy areas on the channel floor as well as a somewhat ubiquitous salt crust deposit. Multiple gully-like channels fed into the main valley channel, likely fed by runoff waters as the heads of the gully-like channels were traced up into the surrounding plateau. Following the valley channel several kilometers upstream showed a wetter region with the entire valley floor covered in reeds.



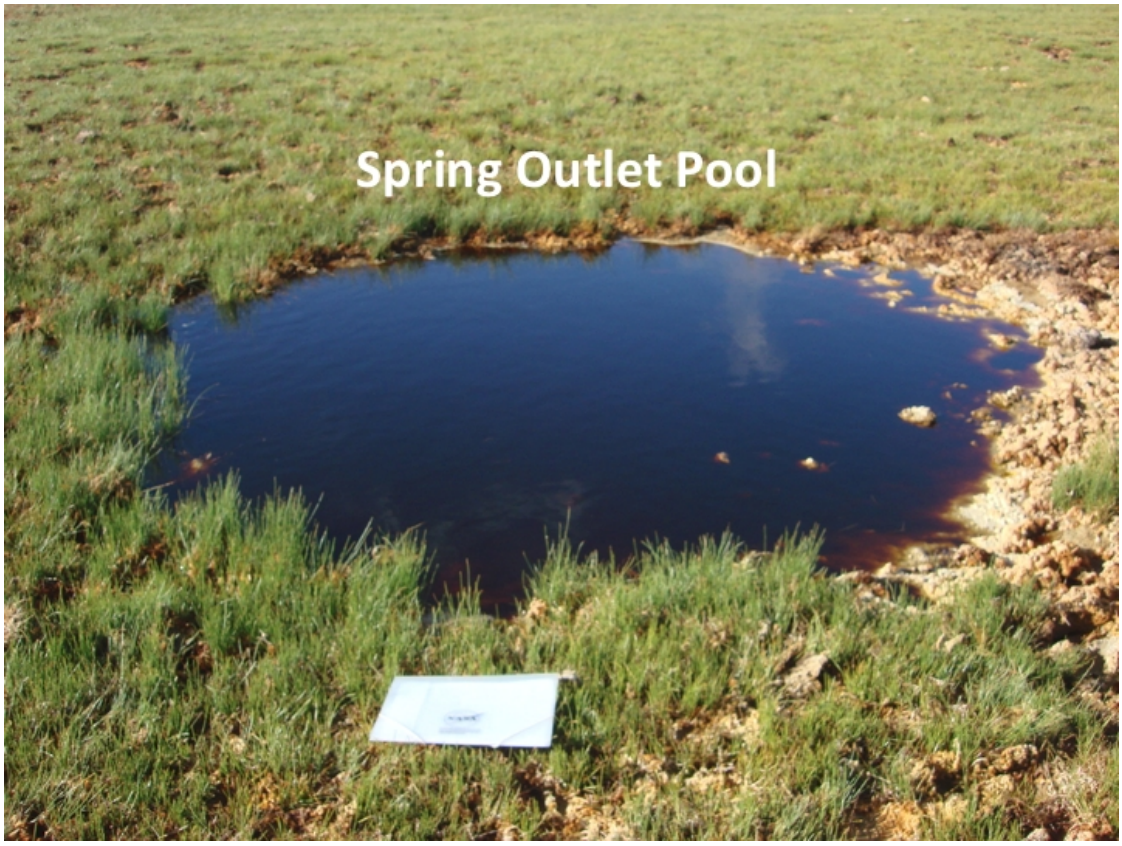
Seeping Springs

Located several hundred meters across from this valley channel by traversing over a flat plain, seeping springs were discovered emanating from a raised mound several 10s of meters in height. The seeps began at approximately the same elevation around the middle portion of the mound, suggesting that subsurface strata layering and variations in permeability are partially controlling the water outflow. The seeps were at a low flow at an imperceptible flow rate. The seeps fed channels flowing downslope over the mound which then fed into larger carved channels. Some of this flow traveled as overland flow, but some water also traveled downslope through the subsurface. For example, at the head of several tributaries were rock overhangs composed of more competent rock layers. The water was flowing underground and then emerging beneath this competent rock layer. Where the water emerged from the subsurface, a vibrant microbial system was supported. There was also evidence of an age gradation for this particular set of springs emanating from the subsurface since over scales of approximately 10 meters there were more overhangs and associated channels with successively less and less water activity. Therefore we discovered spring seeps in various stages of aqueous activity and associated biologic activity. These springs show evidence for the variation in subsurface permeability of rock layers driving water flow and affecting the surface manifestations of water activity.


Spring Mound
Seeping Spring Outlet
Channel

Spring Outlet Pools

Further north by several 10s of meters were the main spring outlet pools. Multiple pools were discovered at the top of the mound, located north of the previously described seep outlets. The spring pools spanned several 100 meters in distance. From several of these spring pools were small river-like channels of flowing water, although devoid of the thick microbial mats found at the overhang seeps. However, these waters were vibrant red with iron, reminiscent in appearance of waters at the Rio Tinto River in Spain.



Mound Stream

On the opposite side of the mound from the initial seeps discovered was a small meandering stream traveling around the periphery of the mound and fed by the spring pool outlets located at higher elevation on the mound. The stream was active with flowing water. The stream was several 10s of centimeters in width and maintained the reddish color along the length of the stream.