**1:3M GEOLOGICAL MAPPING OF THE DERAIN (H-10) QUADRANGLE OF MERCURY.** C.C. Malliband¹, D.A. Rothery¹, M.R. Balme¹, and S.J. Conway². ¹School of Physical Sciences, The Open University, Milton Keynes, MK7 6AA, UK (chris.malliband@open.ac.uk), ²CNRS, Laboratoire de Planétologie et Géodynamique, Université de Nantes, France.

**Introduction:** We are currently undertaking detailed (1:3M) geological mapping of the Derain (H-10) quadrangle of Mercury. This is as part of a coordinated European project to produce a complete set of geological maps [e.g. 1,2,3,4,5] in advance of BepiColumbo’s arrival at Mercury. This mapping will aid mission planning and provide scientific context for BepiColumbo observations.

**Data and Methods:** The map is being produced in ArcGIS 10.5 using data from NASA’s MESSENGER mission. Mapping is being conducted principally using the 166 m/pixel (meters per pixel) BDR mosaic. This is complemented by a range of other MESSENGER products, in particular: Enhanced Color (665 m/pixel), low incidence angle mosaics and the Global DEM (665 m/pixel). Features of particular interest are also investigated using individual frames from MESSENGER’s Narrow Angle Camera. We are preparing this work in line with previous work (e.g. [1]) and Planmap guidelines and standards [6]. As the map is intended for publication at 1:3M, line work is being prepared principally at 1:300k in line with prior work [e.g. 1]. We are also mapping an extra 5° overlap beyond the Derain quadrangle to allow better integration with adjoining maps.

**Units:** We are aiming to produce mapping that is complementary to other geological mapping underway. This includes mapping crater degradation with both the 3-Class degradation scheme [1] (as shown in Figure 1.) and the 5-Class degradation scheme [7].

**Plains Units:** The Derain quadrangle has a complex plains morphology, with numerous examples of small scale smooth plains [8] and plains areas that do not easily classify as either smooth or intercrater plains [9]. We are working to find a method to adequately display the visible geological relationships in these areas. We have classified these areas in the interim as subdued plains. All plains areas currently mapped in this catego-

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![Figure 1. Current state of geological mapping. This shows crater degradation with the 3 class system. A version showing the 5 class degradation system will also be produced.](1807.png)
ry have frequent flooded craters and appear to have a somewhat smoother morphology than areas of inter-crater plains. These are similar to those classified as intermediate plains in the work of [3] and [4]. The origin of this geomorphological unit is not necessarily identical in every occurrence.

**Progress and Ongoing Work:** Progress has advanced considerably over previously presented versions of this map. The majority of plains areas have been mapped, and crater ejecta mapping is around halfway complete. We anticipate completing mapping within the next year.

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