

The surface morphology at MC-118 is characterized by three main crater clusters (Figure 1). The clusters are 5 to 60 meters in diameter and within each, bathymetric relief as high as 6m is observed. The clusters are grouped into the SE, SW, and NW complexes based on the complexity of bathymetric relief and the presence of gas bubbles, hydrates outcrops, sulfide- oxidizing bacteria (e.g. Beggiatoa), authigenic carbonate rocks, other chemoautotrophic communities, or uncovered mud. The presence of these seafloor features allowed characterization of the relative upward fluid flux, as presented in Roberts and Carney (1997) and then modified by Lapham et al. (2008).

The hydrate system at MC-118 has been the subject of investigation for the better part of a decade through the GMHRC. Much of this research has been focused on the seafloor and shallow subsurface, and has resulted in the extensive documentation of surface hydrate and associated carbonate, seafloor morphology and spectral characteristics, benthic and microbial activity, fluid composition and flux at the seafloor, and shallow lithostratigraphy, all with an ultimate goal of establishing a long-term observatory. Included in the existing inventory of site survey data for MC-118 are: (1) high-resolution submarine video surveys (35 hours of video film plus 215 high resolution submarine pictures; 2004, 2006), (2) C&C Hugen AUV survey (swath bathymetry, side-scan sonar, chirp subbottom profiler) (2005 AUV survey), (3) high-frequency side-scan sonar and video mosaic survey (2007 NR1 survey), (4) 2006 Pseudo 3D SDR vertical incidence seismic survey (mound area only), (5) 2008 marine controlled-source electromagnetic (CSEM) survey to assess hydrate bulk properties, and (6) more than 60 shallow lithologic cores (0.05-10 m) taken throughout the MC-118 block, but especially within the SW salt dome mound region. More recently, these observations have been complemented with the analysis of an industrial 3-D seismic reflection survey (TGS-Nopec survey covering the entire MC-118 block) and integration of information from an industry well (ARCO-1) drilled within the block in 1989.