Table 1. Generalized Characteristics of Black Smoker and "Lost City" Systems

	Black Smoker Systems	Carbonate Systems
Location	Within axial valleys or along axial crests of spreading centers, predominantly on young, hot, basaltic crust[1-5]	15 km away from the spreading center on 1.5-2 my old crust[6]
Abundance	Found virtually on all mid-ocean ridges studied in any detail	Lost City is only known field (unlikely that is unique, however)
Heat Source	Fueled by cooling of submarine volcanoes	Fueled by exothermic fluid-mineral reactions (serpentinization) and lithospheric cooling[6-8]
Host Rocks	Typically hosted on volcanic rocks, though some fields, such as Logatchev and Rainbow, are on intermixed gabbro and mantle rocks[4-5,9]	On altered mantle rocks (serpentinites), with lesser gabbro (slowly cooled magma)
Venting Temperatures	Temperatures typically >300°C, some as hot as 407°C, also host low-temperature diffuse systems (<100°C)[1-5]	40-90°C, very rare, distinct, annular orifices, dominantly diffusely venting structures
Fluid Compositions	Acidic (pH 2-5), metal- and sulfide-rich, variable amounts of silica, no Mg, no SO_4[1-5]	Basic (pH 9-11), extremely poor in metals and silica, enriched in Ca, some SO_4, very low to no Mg[6]
Volatile Compositions	Dissolved volatiles are dominated by volcanically-derived CO_2, He, H_2S, but also contain H_2 and CH_4[3-5,9]	Significantly enriched in H_2 and CH_4 derived from fluid-rock reactions, enriched in hydrocarbons[4,6-10]
Plumes	Extensive, particle-laden plumes rising 200 m in water column[3-5]	Minor plumes, <50 m rise height, virtually particle free
Chimney Mineralogy	Typically metal-rich structures commonly include: chalcopyrite, pyrite, sphalerite, amorphous silica, ± barite, ± anhydrite[1-5,9]	Carbonate-dominated: aragonite, calcite, lesser brucite. In areas actively venting, carbonate likely nucleates on filamentous bacterial strands[6,10]
Microorganisms	Very dense and diverse colonies of Eubacteria and Archaea. Significant colonies of chemosynthetic organisms that utilize H_2S, H_2, and CO_2[3-5,9]	Dense colonies of Eubacteria with high diversity, Archaea dominated by single group of organisms that produce and/or oxidize CH_4, H_2 and SO_4 utilization important in cooler areas with higher diversity[4,6,9,10]
Macrofauna	Dense and diverse with colonies of large animals that include tubeworms, clams, shrimp, mussels, crabs, limpets[11]	Low biomass with organisms commonly <1 cm in size, dominated by gastropods. Very rare crabs and shrimp, surprisingly high diversity of mega/macrofauna, some related to MOR black smoker fauna[6]

[1]Corliss et al., 1979; [2]Delaney et al., 1992; [3]Humphris et al., 1995; [4]Kelley et al., 2000; [5]German et al., 2004; [6]Kelley et al., 2001, 2005; [7]Früh-Green et al., 2003; [8]Früh-Green et al., 2004; [9]Wilcock et al., 2004; [10]Schrenk et al., 2004; [11]Van Dover, 2000.