

# Contents

<i>Preface: the rationale for planetary analog studies</i>	page vii
<i>List of contributors</i>	xi
<b>1 The geology of Mars: new insights and outstanding questions</b> JAMES W. HEAD	1
<b>2 Impact structures on Earth and Mars</b> NADINE G. BARLOW, VIRGIL SHARPTON AND RUSLAN O. KUZMIN	47
<b>3 Terrestrial analogs to the calderas of the Tharsis volcanoes on Mars</b> PETER J. MOUGINIS-MARK, ANDREW J. L. HARRIS AND SCOTT K. ROWLAND	71
<b>4 Volcanic features of New Mexico analogous to volcanic features on Mars</b> LARRY S. CRUMPLER, JAYNE C. AUBELE AND JAMES R. ZIMBELMAN	95
<b>5 Comparison of flood lavas on Earth and Mars</b> LASZLO KESZTHELYI AND ALFRED McEWEN	126
<b>6 Rootless volcanic cones in Iceland and on Mars</b> SARAH A. FAGENTS AND THORVALDUR THORDARSON	151
<b>7 Mars interior layered deposits and terrestrial sub-ice volcanoes compared: observations and interpretations of similar geomorphic characteristics</b> MARY G. CHAPMAN AND JOHN L. SMELLIE	178
<b>8 Lava–sediment interactions on Mars: evidence and consequences</b> TRACY K. P. GREGG	211

<b>9</b>	<b>Eolian dunes and deposits in the western United States as analogs to wind-related features on Mars</b>	<b>232</b>
	JAMES R. ZIMBELMAN AND STEVEN H. WILLIAMS	
<b>10</b>	<b>Debris flows in Greenland and on Mars</b>	<b>265</b>
	FRANÇOIS COSTARD, FRANÇOIS FORGET, VINCENT JOMELLI, NICOLAS MANGOLD AND JEAN-PIERRE PEULVAST	
<b>11</b>	<b>Siberian rivers and Martian outflow channels: an analogy</b>	<b>279</b>
	FRANÇOIS COSTARD, E. GAUTIER AND D. BRUNSTEIN	
<b>12</b>	<b>Formation of valleys and cataclysmic flood channels on Earth and Mars</b>	<b>297</b>
	GORO KOMATSU AND VICTOR R. BAKER	
<b>13</b>	<b>Playa environments on Earth: possible analogs for Mars</b>	<b>322</b>
	GORO KOMATSU, GIAN GABRIELE ORI, LUCIA MARINANGELI AND JEFFREY E. MOERSCH	
<b>14</b>	<b>Signatures of habitats and life in Earth's high-altitude lakes: clues to Noachian aqueous environments on Mars</b>	<b>349</b>
	NATHALIE A. CABROL, CHRIS P. MCKAY, EDMOND A. GRIN, KEVE T. KISS, ERA ÁCS, BALINT TÓTH, ISTRAN GRIGORSZKY, K. SZABÓ, DAVID A. FIKE, ANDREW N. HOCK, CECILIA DEMERGASSO, LORENA ESCUDERO, P. GALLEGUILLOS, GUILLERMO CHONG, BRIAN H. GRIGSBY, JEBNER ZAMBRANA ROMÁN AND CRISTIAN TAMBLEY	
<b>15</b>	<b>The Canyonlands model for planetary grabens: revised physical basis and implications</b>	<b>371</b>
	RICHARD A. SCHULTZ, JASON M. MOORE, ERIC B. GROSFILS, KENNETH L. TANAKA AND DANIEL MÈGE	
<b>16</b>	<b>Geochemical analogs and Martian meteorites</b>	<b>400</b>
	HORTON E. NEWSOM	
<b>17</b>	<b>Integrated analog mission design for planetary exploration with humans and robots</b>	<b>424</b>
	KELLY SNOOK, BRIAN GLASS, GEOFFREY BRIGGS AND JENNIFER JASPER	
	<i>Index</i>	<b>457</b>

*Color plates are located between pages 210 and 211*