LIST OF FIGURES

		Page No.
1.1	Long term average wind speed (m/s) map for summer season (June-August) at 10m above surface. Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**5**
1.2	Long term average precipitation map (m) for summer season (June-August). Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**6**
1.3	Long term average wind speed (m/s) map for autumn season (September-November) at 10m above surface. Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**6**
1.4	Long term average precipitation map (m) for autumn season (September-November). Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**7**
1.5	Long term average wind speed (m/s) map for winter season (December-February) at 10m above surface. Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**7**
1.6	Long term average precipitation map (m) for winter season (December-February). Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**8**
1.7	Long term average wind speed (m/s) map for spring season (March-May) at 10m above surface. Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**8**
1.8	Long term average precipitation map (m) for spring season (March-May). Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**9**
1.9	Climatological mean SST during the summer season. Note the low SST in the western part of the basin. Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**10**
1.10	Climatological mean SST during the winter season. Note the low SST in Northern arabian sea caused by the wind induced cooling. Map prepared using ERA-Interim data (Berrisford et al., 2011) in an online tool called Climate Reanalyzer (http://cci-reanalyzer.org).	**11**

2.1 Location of sediment cores 4018 and 4016 are marked with red dots in the bathymetry map of Arabian Sea. Map has been plotted using licensed copy of Ocean Data View (https://odv.awi.de/). **15**

2.2 Age-depth model of 4016 and 4018 sediment cores. Age model for 4018 is based on Tiwari et al., 2010. Grey line indicate the sedimentation rate. **17**

3.1 Temporal variation of Biogenic silica flux with two sigma uncertainty in sediment core SS4018. Filled triangles at the bottom of the plot marks the age-control points with one sigma uncertainty (after Balaji et al., 2018). **30**

3.2 Modern oceanography of western Arabian Sea. Synchronous change in upwelling intensity and biogenic silica flux clearly indicate that the siliceous productivity in western Arabian Sea is controlled by SWM upwelling. Upwelling strength data is used from Nair, 1999 and Opal flux from Haake et al. (1993). **31**

3.3 Biogenic silica burial efficiency in Somali Basin (Koning et al., 2001). **32**

3.4 Location of sediment core SS-4018 (filled star) in the Arabian Sea. Also shown are the sites discussed in the paper: NIOP-929 (Saher et al., 2007), NIOP-905 (Huguet et al., 2006), SK-17 (Anand et al., 2008), Qunf cave (Fleitmann et al., 2007). **34**

3.5 Western Arabian sea SST versus southwest monsoon rainfall in Western Ghats Mountains (data points are collected from Vecchi and Harison, 2004). **36**

3.6 Comparison of biogenic silica flux with SST records from western Arabian Sea for pre-Holocene time (18.5-11.7 ka BP). a)Biogenic silica flux, b) Mg/Ca based SST from NIOP-905 core (Anand et al., 2008), c) Mg/Ca based SST from NIOP-929 core (Saher et al., 2007), d) TEX_{86} SST from NIOP-905 core (Huguet et al., 2006). **38**

3.7 Comparison of biogenic silica flux with rainfall record from eastern Arabian Sea for pre-Holocene time (18.5-11.7 ka BP). (a) Biogenic silica flux (present study), (b) $\delta^{18}O_w$ IVF (Anand et al., 2008). **39**

3.8 Comparison of biogenic silica flux with silica to carbonate ratio in 4018 sediment core. Synchronous changes in both parameters indicate the dominance of biogenic silica flux on the ratio. **41**

3.9 Comparison of Somali upwelling with western Arabian Sea SST records. a) Biogenic silica flux, b) Mg/Ca based SST from NIOP-905 core (Anand et al., 2008), c) Mg/Ca based SST from NIOP-929 core (Saher et al., 2007), d) TEX86 SST from NIOP-905 core (Huguet et al., 2006). Grey arrow indicate the trend of proxy records during the last 8 ka. **42**

3.10 Comparison of Somali upwelling with southwest monsoon rainfall records during Holocene. (a) Biogenic silica flux (present study), (b) Oman speleothem record, (c) $\delta^{18}O_w$ IVF data from eastern Arabian Sea. Grey arrow indicate the trend of proxy record during the last 8 ka. **43**

4.1 Comparision of Ba excess with Mn excess in the 4018 sediment core record. **47**

4.2 Temporal variation of productivity and Aeolian flux in 4018 sediment core record. **49**

4.3 Temporal changes in the Carbon export flux (CEF) and Carbon burial efficiency (CBE) in the 4018 sediment core. **52**

4.4 Aeolian flux versus magnetic susceptibility in 4018 sediment core. The linear relation between them suggests aeolian flux is the major source of magnetic mineral for the present sediment core. **53**

4.5 Aeolian flux and magnetic susceptibility record of 4018 sediment core for the last 18.5 ka B.P. **54**

4.6 Aeolian flux versus Carbon export flux in the present sediment core record for the last 18.5 ka B.P. **57**

4.7 Aeolian flux versus CEF in the 4018 sediment core record for the time gap from 19 to 11.7 ka B.P. **58**

4.8 Aeolian flux versus CEF in the present record during Holocene (last 11.7 ka B.P.). **58**

5.1 Location of sediment core 4016 along with other records discussed in this chapter: MD04-2876 (Pichevin et al., 2007), NIOP-455, NIOP-464 (Reichart et al., 1998), NAST, SO42-74KL, SO90-111 (Suthhof et al., 2001), EAST (Mobius et al., 2011), RC27-24, RC27-61 (Altabet et al., 1995), ODP-722 (Altabet et al., 1999), RC27-14, RC27-23 (Altabet et al., 2002). **61**

5.2 Concentration versus isotopic composition organic nitrogen in 4016 sediment core. **64**

5.3 Temporal plot of concentration and flux of productivity proxies in 4016 sediment core. Solid lines in plot (a) and (b) are the flux values and the dotted lines are concentrations. **66**

5.4 Temporal variation in Nitrogen isotopic composition of organic matter in 4016 sediment core. Horizontal dotted lines marks the different set of values with the average of 6.4 and 8.3 ‰ during the intervals of 34.6-15 and 15-1.3 ka B.P. respectively. **68**

5.5 Comparison of 4016 $\delta^{15}N$ record with Oman margin records. Grey bar indicates the timing of positive shift in all the core records. **70**

5.6 Comparison of 4016 $\delta^{15}N$ record with Northeast Arabian Sea records. **71**

5.7 Location of 4016 sediment core in Arabian Sea (star). Also shown are the coastal sites. Map has been plotted using licensed copy of Ocean Data View (https://odv.awi.de/). **74**

5.8 Comparison of coastal and open ocean $\delta^{15}N$ (‰) records. Red and green plots are coastal records from Altabet et al., 2002. **75**

6.1 Map of the Indus River basin and submarine fan. Red star marks the location 4016 sediment core. Also shown are the locations of the previously published datasets (Sirocko, 1989; Reichart et al., 1998). **77**

6.2 Lithogenic sediment fraction and flux in the 4016 sediment core record. (a) lithogenic sediment percentage, (b) lithogenic sediment mass accumulation rate **79**

6.3 Magnetic susceptibility record of 4016 sediment core. (a) Magnetic susceptibility, (b) frequency dependent magnetic susceptibility, (c) magnetic susceptibility to lithogenic fraction ratio. **80**

6.4 Variation of major element concentration with age and its ratio to Ti in the sediment core 4016 in the northern Arabian Sea. **82**

6.5 Average lithogenic sediment flux ($g/m^2/y$) during 34 to 29 ka B.P. from Indus River in the northern Arabian Sea. **84**

6.6 Average lithogenic sediment flux ($g/m^2/y$) during 29 to 26 ka B.P. from the Indus River in the northern Arabian Sea. **85**

6.7 Average lithogenic sediment flux ($g/m^2/y$) during 26 to 17 ka B.P. from the Indus River in the northern Arabian Sea. **86**

6.8 Average lithogenic sediment flux ($g/m^2/y$) during 17 to 11.7 ka B.P. from the Indus River in the northern Arabian Sea. The sediment flux is more than two times higher than recent sedimentation. **87**

6.9 Average lithogenic sediment flux ($g/m^2/y$) from the Indus River during the last 11.7 ka B.P. **89**

6.10 Comparison of lithogenic sediment flux in the Indus submarine fan with global sea level curve (meters below present sea level; Waelbroeck et al., 2002). Box plot shows the average lithogenic sediment flux during each time slices. **91**

6.11 Comparison of Indus submarine fan sedimentation with western Himalayan climate (Guliya ice cap data; Thompson et al., 1997) **93**

6.12 Comparison of palaeo-uplift/incision rate in the northwestern Himalaya (Indus River basin, Burbank et al., 1996; Thakur et al., 2014; Dey et al., 2016) with sediment flux in the Indus submarine fan. **94**