

Some characteristics of translational speed of cyclonic disturbances over North Indian Ocean in recent years

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Regional Specialised Meteorological Centre (RSMC), New Delhi, has prepared average translational speed of cyclonic disturbances for different seasons and year as a whole over the Bay of Bengal (BOB), Arabian Sea (AS) and North Indian Ocean (NIO) from 1990 to the present.

These are presented in Table1 to Table 4 for tropical cyclones (cyclonic storm and above). For details about the data and for referring this data for further research the following publication may kindly be referred.

P. S. Chinchole and M. Mohapatra, 2016, Some Characteristics of translational speed of Cyclonic Disturbances over the North Indian Ocean during recent years, In Tropical cyclone activity over North Indian Ocean, Co-published by Springer and Capital Publishing Company, New Delhi, pp.153-168

Table 1: 06, 12 and 24 hourly averages annual translational Speed over BOB, ARB and NIO during 1990-2020

Period	Annual								
Basin	BOB			ARB			NIO		
Averaging period/ Year	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS
1990	15.9	14.9	14.0	7.6	7.5	6.8	15.4	14.4	13.6
1991	14.3	14.6	14.3	-	-	-	14.3	14.6	14.3
1992	15.5	15.3	14.9	17.3	17.0	17.1	15.9	15.8	15.4
1993	16.6	16.3	16.5	15.4	15.2	15.8	16.0	15.7	16.1
1994	14.8	14.4	13.7	16.7	17.3	17.6	15.7	15.9	15.7
1995	18.1	18.5	18.5	6.8	6.7	6.3	15.4	15.5	15.2
1996	13.4	13.1	11.8	8.8	9.3	9.5	12.1	12.0	11.2
1997	14.1	13.6	13.2	17.8	16.1	12.7	14.4	13.8	13.2
1998	16.6	16.1	15.9	15.7	14.8	13.8	16.1	15.4	14.6
1999	14.8	14.3	14.3	15.3	14.6	14.2	14.9	14.4	14.3
2000	14.0	12.8	11.8	-	-	-	14.0	12.8	11.8
2001	12.7	11.9	11.6	9.8	8.7	8.0	10.4	9.2	8.6
2002	13.1	12.2	11.5	16.3	16.1	15.7	13.9	13.1	12.6
2003	12.3	11.9	12.2	16.2	15.1	14.4	12.9	12.5	12.4
2004	15.0	14.7	14.0	10.3	9.9	10.1	11.9	11.5	10.7
2005	9.5	9.4	9.4	-	-	3.7	9.5	9.4	8.9
2006	16.8	16.4	15.7	6.9	6.3	3.2	13.9	13.4	12.5
2007	15.6	15.6	15.4	12.0	12.3	12.6	14.3	14.4	14.4
2008	12.2	12.1	11.1	16.7	17.4	15.8	12.8	12.7	12.0
2009	14.7	14.5	13.5	19.8	19.9	19.5	15.6	15.4	14.3
2010	14.8	14.1	13.3	12.6	12.6	12.6	13.9	13.5	13.0
2011	9.7	9.6	9.5	12.1	11.7	12.2	11.2	10.9	11.1
2012	11.5	11.1	10.8	22.8	23.3	25.3	13.6	13.6	13.5
2013	13.8	13.5	13.3	10.4	10.1	9.0	13.6	13.2	13.0
2014	13.6	13.3	12.6	11.2	11	10.6	11.2	8.4	8.2
2015	6.1	5.2	5	11	11.2	11.4	9.6	9.2	8.9
2016	14.2	13.5	13.3	0	0	0	14.2	13.5	13.3
2017	18.7	18.0	17.2	0	0	0	18.7	18.0	17.2
2018	15.6	15.5	15.4	10.5	10.5	10.5	13.4	13.4	13.3
2019	13.3	13.3	13.2	14.0	13.8	13.4	13.8	13.6	13.3
2020	10.6	10.5	10.7	19.3	18.7	17.3	14.0	13.8	13.4

Table 2: 06, 12 and 24 hourly average translational Speed over BOB, ARB and NIO during pre-monsoon season of 1990-2020

Period	Pre-monsoon season								
Basin	BOB			ARB			NIO		
Averaging period/ Year	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS
1990	13.18	10.64	8.41	-	-	-	13.18	10.64	8.41
1991	14.14	14.17	13.32	-	-	-	14.14	14.17	13.32
1992	17.17	17.22	16.75	-	-	-	17.17	17.22	16.75
1993	-	-	-	-	-	-			
1994	14.68	14.06	13.11	-	-	-	14.68	14.06	13.11
1995	12.72	13.07	12.79	-	-	-	12.72	13.07	12.79
1996	27.33	25.10		-	-	-	27.33	25.10	
1997	16.91	17.01	16.92	-	-	-	16.91	17.01	16.92
1998	15.16	15.42	16.19	-	-	-	15.16	15.42	16.19
1999	-	-	-	15.28	14.65	14.16	15.28	14.65	14.16
2000	13.66	14.43	12.82	-	-	-	13.66	14.43	12.82
2001	-	-	-	9.58	7.93	7.17	9.58	7.93	7.17
2002	18.33	18.33	-	16.29	16.07	15.70	16.61	16.34	15.70
2003	10.74	10.14	9.31	-	-	-	10.74	10.14	9.31
2004	12.19	12.03	9.30	8.39	8.51	8.20	9.66	9.64	8.52
2005	-	-	-	-	-	-	-	-	-
2006	13.59	13.21	12.35	-	-	-	13.59	13.21	12.35
2007	13.00	13.36	13.30	-	-	-	13.00	13.36	13.30
2008	11.61	11.45	10.97	-	-	-	11.61	11.45	10.97
2009	17.93	17.59	17.39	-	-	-	17.93	17.59	17.39
2010	13.23	13.05	12.89	6.34	6.05	6.03	9.89	9.78	9.87
2011	-	-	-	-	-	-	-	-	-
2012	-	-	-	-	-	-	-	-	-
2013	15.97	16.02	15.74	-	-	-	15.97	16.02	15.74
2014									
2015	-	-	-	-	-	-	-	-	-
2016	19.8	20.0	19.8	-	-	-	19.8	20.0	19.8
2017	22.5	21.8	21.0	-	-	-	22.5	21.8	21.0
2018	-	-	-	10.5	10.5	10.6	10.5	10.5	10.6
2019	14.2	14.4	14.4	-	-	-	14.2	14.4	14.4
2020	13.4	13.4	13.8	-	-	-	13.4	13.4	13.8

Table 3: 06, 12 and 24 hourly average translational Speed over BOB, ARB and NIO during monsoon season of 1990-2020

Period	Monsoon Season								
Basin	BOB			ARB			NIO		
Averaging period/ YEAR	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS
1990	17.38	17.59	17.66	-	-	-	17.38	17.59	17.66
1991	16.45	16.82	16.28	-	-	-	16.45	16.82	16.28
1992	18.78	18.20	18.01	11.39	10.26	9.77	16.32	15.56	15.26
1993	-	-	-	-	-	-		-	-
1994	-	-	-	18.26	18.93	19.33	18.26	18.93	19.33
1995	11.84	12.53	11.63	-	-	-	11.84	12.53	11.63
1996	13.36	13.16	12.44	10.96	11.79	11.39	12.33	12.58	11.96
1997	15.08	14.49	14.17	-	-	-	15.08	14.49	14.17
1998	22.80	22.77	21.85	17.25	17.12	16.38	18.31	18.11	16.95
1999	19.05	18.31	21.30	-	-	-	19.05	18.31	21.30
2000	25.47	21.85		-	-	-	25.47	21.85	
2001	-	-	11.46	9.78	9.80	9.83	9.78	9.80	9.98
2002	-	-		-	-	-	-	-	-
2003	-	-	20.85	-	-	-	-	-	20.85
2004	15.78	15.08	16.40	6.10	3.34	2.67	10.68	9.21	7.93
2005	15.40	13.59	13.14	-	-	3.69	15.40	13.59	9.59
2006	18.60	18.12	17.44	2.70	2.92	3.20	13.97	13.57	12.82
2007	16.01	16.01	15.86	14.18	14.30	14.88	15.45	15.48	15.58
2008	11.07	11.55	12.38	16.67	17.38	17.21	14.80	15.26	15.03
2009	16.73	17.98	17.25	18.83	16.81		17.22	17.74	17.25
2010				16.25	15.92	15.40	16.25	15.92	15.40
2011	7.91	8.15	8.00	6.48	8.64	6.48	8.99	9.23	8.34
2012	-	-	-	-	-	-	-	-	
2013	18.92	17.57	19.52	-	-	-	18.92	17.57	19.52
2014	-	-	-	10.8	10.4	10.5	10.8	10.4	10.5
2015	6.1	5.2	5.0	-	-	-	6.1	5.2	5.0
2016	-	-	-	-	-	-	-	-	-
2017	-	-	-	-	-	-	-	-	-
2018	25.8	26.2	26.7	-	-	-	25.8	26.2	26.7
2019	-	-	-	16	16.1	16.1	16	16.1	16.1
2020	-	-	-	16.6	15.8	15.1	16.6	15.8	15.1

Table 4: 06, 12 and 24 hourly average translational Speed over BOB, ARB and NIO during post-monsoon season of 1990-2020

Period	Post-monsoon season								
Basin	BOB			ARB			NIO		
Averaging period/ YEAR	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS	06 HRS	12 HRS	24 HRS
1990	16.11	14.75	14.44	7.62	7.45	6.78	14.80	13.66	13.41
1991	11.41	11.72	11.86	-	-	-	11.41	11.72	11.86
1992	13.84	13.88	13.35	20.49	20.87	21.83	15.62	15.69	15.37
1993	16.55	16.32	16.47	15.41	15.17	15.76	15.95	15.72	16.09
1994	15.17	15.39	15.18	15.47	15.98	16.39	15.36	15.78	16.02
1995	25.77	25.48	24.96	6.79	6.67	6.30	17.80	17.48	16.77
1996	12.73	12.59	11.57	7.38	7.72	8.27	11.41	11.37	10.84
1997	7.57	7.06	6.46	17.77	16.11	12.69	10.86	9.87	8.20
1998	16.18	15.55	15.42	15.00	13.89	12.74	15.51	14.59	13.78
1999	13.38	13.20	13.41	-	-	-	13.38	13.20	13.41
2000	13.50	12.32	11.72	-	-	-	13.50	12.32	11.72
2001	12.69	11.86	11.65	11.43	10.61	10.59	12.32	11.50	11.38
2002	12.80	11.94	11.53	-	-	-	12.80	11.94	11.53
2003	17.03	17.83	17.10	16.18	15.10	14.40	16.64	16.53	16.24
2004	18.04	18.13	18.48	14.01	13.81	13.59	15.02	14.80	14.34
2005	9.58	9.59	9.33	-	-	-	9.58	9.59	9.33
2006	6.54	6.38	6.23	-	-	-	6.54	6.38	6.23
2007	15.89	15.62	14.83	9.53	10.25	10.40	12.54	12.79	12.54
2008	13.05	12.90	11.07			13.40	13.05	12.90	11.57
2009	9.08	8.66	7.97	20.16	20.72	19.54	12.77	12.52	11.27
2010	15.35	14.46	13.42	-	-	-	15.35	14.46	13.42
2011	12.82	11.74	11.70	12.46	11.88	12.31	12.56	11.84	12.15
2012	11.49	11.10	10.81	22.78	23.35	25.29	13.62	13.62	13.49
2013	12.36	12.05	11.84	10.41	10.11	9.03	12.15	11.84	11.55
2014	13.6	13.3	12.6	8.3	8.4	8.2	11.2	11.1	10.7
2015	-	-	-	11.0	11.2	11.4	11.0	11.2	11.4
2016	12.4	11.0	10.7	-	-	-	12.4	11.0	10.7
2017	15.5	15.0	10.7	-	-	-	15.5	15.0	10.7
2018	10.5	10.4	10.4	12.2	12.0	11.7	22.7	22.4	22.1
2019	11.4	11.2	10.8	12.7	12.4	11.5	12.4	12.1	11.4
2020	9.1	9.1	9.2	22.0	21.7	19.5	13.4	13.3	12.6