

## APPENDICES

### APPENDIX 1. CALENDAR OF CIRCULATION TYPES FOR TERRITORY OF SPITSBERGEN BY T. NIEDŹWIEDŹ

#### A1.1. Monthly, annual and seasonal values of circulation type S (southern, meridional index) in 1951–2012.

An – annual, Win – winter (December-February), Spr – spring (March-May),  
Sum – summer (June-August), Aut – autumn (September-November)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	An	Win	Spr	Sum	Aut
1951	-6	17	-22	-22	-13	-8	-1	4	-16	-6	-14	-11	-98	-8	-57	-5	-36
1952	-11	-16	-4	-7	-16	7	1	-11	-11	3	6	-7	-66	-38	-27	-3	-2
1953	-9	0	-17	-12	-13	16	-2	16	-10	10	5	0	-16	-16	-42	30	5
1954	-15	22	-12	-12	0	-10	8	-8	-1	-1	20	9	0	7	-24	-10	18
1955	-31	-3	3	-2	-5	-18	9	3	18	-17	-15	-5	-63	-25	-4	-6	-14
1956	4	5	-10	-3	-6	-15	14	-15	-12	3	10	8	-17	4	-19	-16	1
1957	5	-3	-3	-2	-21	-26	-6	4	-1	12	-6	-10	-57	10	-26	-28	5
1958	5	-4	-10	2	-3	-10	-18	-19	-1	4	-5	-6	-65	-9	-11	-47	-2
1959	-21	-8	-13	6	0	-18	-3	2	5	12	3	12	-23	-35	-7	-19	20
1960	-10	-6	7	7	2	-8	14	-12	15	-23	4	-2	-12	-4	16	-6	-4
1961	3	-4	-15	-14	-3	7	1	12	-13	5	6	-13	-28	-3	-32	20	-2
1962	3	-7	-31	-12	-13	-10	-5	-7	-5	-6	2	-9	-100	-17	-56	-22	-9
1963	-20	-21	-1	-2	16	-1	-19	12	5	7	-14	-15	-53	-50	13	-8	-2
1964	1	-6	5	1	-5	3	17	-1	-8	-3	-4	3	3	-20	1	19	-15
1965	-7	-7	-23	6	-8	-11	-8	4	4	-10	-7	-8	-75	-11	-25	-15	-13
1966	-15	-4	-7	12	-16	2	5	-17	-20	-11	-10	21	-60	-27	-11	-10	-41
1967	-20	-4	-2	-9	-4	4	8	15	5	-16	2	-15	-36	-3	-15	27	-9
1968	-4	-14	-9	-13	-18	-19	-17	-12	-17	-19	-4	-14	-160	-33	-40	-48	-40
1969	-3	-3	-5	-8	-1	4	16	-4	15	4	-18	5	2	-20	-14	16	1
1970	-9	-8	4	-4	-7	3	-5	6	0	-12	-12	-13	-57	-12	-7	4	-24
1971	-20	15	-17	-5	0	-11	8	4	-2	-9	-25	-4	-66	-18	-22	1	-36
1972	18	-3	-6	-22	7	20	5	3	3	2	12	-3	36	11	-21	28	17
1973	6	-10	-8	-3	-19	0	5	-4	5	-24	-30	-6	-88	-7	-30	1	-49
1974	18	7	4	-17	-4	-2	9	3	0	-3	11	3	29	19	-17	10	8
1975	-5	-10	-10	-9	1	-15	11	10	-8	-17	-3	-24	-79	-12	-18	6	-28
1976	-4	5	22	-12	9	0	7	18	-19	8	-1	-6	27	-23	19	25	-12
1977	2	-8	-14	-14	-19	-9	-1	11	-2	8	1	-1	-46	-12	-47	1	7
1978	-15	-21	0	-2	9	4	3	8	-20	-13	-8	-7	-62	-37	7	15	-41
1979	-1	-1	7	-5	-11	-7	8	4	-4	3	2	-6	-11	-9	-9	5	1
1980	-2	-9	4	9	-11	-4	-8	5	11	-33	-8	-14	-60	-17	2	-7	-30
1981	-18	6	-9	-14	-4	-6	8	9	3	-3	-1	-12	-41	-26	-27	11	-1
1982	-17	-3	14	4	-5	-24	4	-2	-8	10	0	-11	-38	-32	13	-22	2
1983	2	-9	-1	-6	-4	0	11	-11	-2	-10	-22	-17	-69	-18	-11	0	-34
1984	9	5	3	14	0	-16	-2	13	10	4	8	18	66	-3	17	-5	22
1985	-10	11	-3	-22	-7	-16	20	0	-15	-4	-9	-8	-63	19	-32	4	-28
1986	2	-16	0	-15	2	9	16	3	-16	5	-11	6	-15	-22	-13	28	-22
1987	5	-3	4	14	-1	-12	-11	-10	0	-2	-6	-15	-37	8	17	-33	-8
1988	-1	12	-2	-13	-12	10	5	5	-4	-10	-14	-15	-39	-4	-27	20	-28
1989	-10	-6	1	2	-5	3	13	-5	9	2	1	-12	-7	-31	-2	11	12
1990	-33	9	-9	-3	-33	5	12	5	32	4	-11	13	47	20	-45	22	25

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	An	Win	Spr	Sum	Aut
1991	5	-1	2	-9	-11	-2	-6	19	-17	-3	-11	-10	-44	17	-18	11	-31
1992	1	0	-6	16	-7	1	-5	6	8	-15	12	-3	8	-9	3	2	5
1993	-3	-11	-3	-16	-8	-10	2	19	-11	-18	22	-2	-39	-17	-27	11	-7
1994	-1	-6	15	6	-2	5	15	-5	-3	-23	-9	3	-5	-9	19	15	-35
1995	-7	-12	-1	-10	1	-3	-10	-8	5	-21	-18	-13	-97	-16	-10	-21	-34
1996	0	-8	10	-4	-20	7	3	10	9	-1	-7	-13	-14	-21	-14	20	1
1997	-8	-2	-4	-18	-9	-9	6	15	-7	-7	-3	-1	-47	-23	-31	12	-17
1998	-9	8	15	-9	-18	-8	1	14	-16	3	9	-6	-16	-2	-12	7	-4
1999	13	-3	10	-9	10	1	-12	-1	13	-14	13	-7	14	4	11	-12	12
2000	-1	0	-16	-17	-8	-18	-6	2	9	19	-1	-9	-46	-8	-41	-22	27
2001	-5	1	-14	-13	-4	-3	-4	0	12	-8	-16	-1	-55	-13	-31	-7	-12
2002	-10	-3	-9	1	-8	-7	-2	-1	-17	-11	3	7	-57	-14	-16	-10	-25
2003	-19	4	-10	-8	-13	-15	3	-5	-9	-3	9	-23	-89	-8	-31	-17	-3
2004	3	-6	11	17	-8	-19	24	-1	1	-6	-18	3	1	-26	20	4	-23
2005	12	6	1	-2	-8	-3	-2	2	-16	-9	6	17	4	21	-9	-3	-19
2006	26	-12	-14	31	-15	-1	4	6	-20	-8	7	1	5	31	2	9	-21
2007	2	0	-1	-14	-4	-8	-9	-13	-20	-6	1	-6	-78	3	-20	-31	-25
2008	-2	6	-10	-19	-2	-22	-4	-8	4	-6	-9	0	-72	-2	-31	-34	-11
2009	6	1	7	-23	6	-22	-15	-2	-7	-29	21	4	-53	7	-10	-39	-15
2010	2	7	-26	-4	9	-34	1	-24	2	-16	-16	-5	-104	13	-21	-57	-30
2011	-6	21	-18	8	-9	-29	-4	1	14	-4	-8	-5	-39	10	-19	-32	2
2012	23	6	4	-27	-9	-19	-18	-5	-1	-14	-7	3	-64	24	-32	-42	-22
<b>1951-2012</b>																	
<b>Mean</b>	<b>-3</b>	<b>-2</b>	<b>-4</b>	<b>-5</b>	<b>-6</b>	<b>-6</b>	<b>2</b>	<b>1</b>	<b>-2</b>	<b>-6</b>	<b>-3</b>	<b>-4</b>	<b>-38</b>	<b>-9</b>	<b>-15</b>	<b>-4</b>	<b>-11</b>
$\sigma_n$	11	9	11	11	9	11	10	10	11	11	11	9	41	17	19	21	18
<b>Max</b>	<b>26</b>	<b>22</b>	<b>22</b>	<b>31</b>	<b>16</b>	<b>20</b>	<b>24</b>	<b>19</b>	<b>32</b>	<b>19</b>	<b>22</b>	<b>21</b>	<b>66</b>	<b>31</b>	<b>20</b>	<b>30</b>	<b>27</b>
Year	2006	1954	1976	2006	1963	1972	2004	1993	1990	2000	1992	1966	1984	2006	2004	1953	2000
<b>Min</b>	<b>-31</b>	<b>-21</b>	<b>-31</b>	<b>-27</b>	<b>-33</b>	<b>-34</b>	<b>-19</b>	<b>-24</b>	<b>-20</b>	<b>-33</b>	<b>-30</b>	<b>-24</b>	<b>-160</b>	<b>-50</b>	<b>-57</b>	<b>-57</b>	<b>-49</b>
Year	1955	1963	1962	2012	1990	2010	1963	2010	1978	1980	1973	1975	1968	1963	1951	2010	1973
		1978							2006								
									2007								
<b>1978-2012</b>																	
<b>Mean</b>	<b>0</b>	<b>-1</b>	<b>-1</b>	<b>-5</b>	<b>-6</b>	<b>-8</b>	<b>1</b>	<b>1</b>	<b>-2</b>	<b>-7</b>	<b>-3</b>	<b>-4</b>	<b>-35</b>	<b>-6</b>	<b>-12</b>	<b>-5</b>	<b>-12</b>
$\sigma_n$	11	9	10	13	8	11	10	9	12	11	11	9	38	18	18	21	18
<b>Max</b>	<b>26</b>	<b>21</b>	<b>15</b>	<b>31</b>	<b>10</b>	<b>10</b>	<b>24</b>	<b>19</b>	<b>32</b>	<b>19</b>	<b>22</b>	<b>18</b>	<b>66</b>	<b>31</b>	<b>20</b>	<b>28</b>	<b>27</b>
Year	2006	2011	1994	2006	1999	1988	2004	1993	1990	2000	1992	1984	1984	2006	2004	1986	2000
<b>Min</b>	<b>-19</b>	<b>-21</b>	<b>-26</b>	<b>-27</b>	<b>-33</b>	<b>-34</b>	<b>-18</b>	<b>-24</b>	<b>-20</b>	<b>-33</b>	<b>-22</b>	<b>-23</b>	<b>-104</b>	<b>-37</b>	<b>-45</b>	<b>-57</b>	<b>-41</b>
Year	2003	1978	2010	2012	1990	2010	2012	2010	2006	1980	1983	2003	2010	1978	1990	2010	1978

$\sigma_n$  – standard deviation

**A1.2. Monthly, annual and seasonal values of circulation type W  
(westerly, zonal index) in 1951–2012.**

An – annual, Win – winter (December-February), Spr – spring (March-May),  
Sum – summer (June-August), Aut – autumn (September-November)

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	An	Win	Spr	Sum	Aut
1951	-8	-11	-32	-22	-1	8	-1	4	-2	10	-12	-29	-96	-44	-55	11	-4
1952	-29	-26	-26	-27	-8	-21	-5	13	-27	3	-12	-33	-198	-84	-61	-13	-36
1953	-19	0	-13	-18	-3	16	2	2	4	-10	-9	4	-44	-52	-34	20	-15
1954	-3	4	-26	-12	-12	-14	2	-6	-23	-17	-8	-27	-142	5	-50	-18	-48
1955	-15	-31	-31	-14	-25	0	23	13	-16	-17	-15	-33	-161	-73	-70	36	-48
1956	-28	3	2	-29	-14	7	12	-13	-16	-21	-8	-14	-119	-58	-41	6	-45
1957	-13	-37	-33	-8	-9	-18	2	-4	-15	-28	-26	-30	-219	-64	-50	-20	-69
1958	-13	-32	-20	-16	-23	-6	-20	-3	11	-16	-3	-30	-171	-75	-59	-29	-8
1959	-33	0	-3	-28	-2	-4	7	-8	-13	2	-1	-6	-89	-63	-33	-5	-12
1960	-18	-24	-13	-23	8	-12	-2	-12	-9	-1	-16	-16	-138	-48	-28	-26	-26
1961	-29	-14	-31	-20	-15	-9	-9	-22	-5	-15	-32	-25	-226	-59	-66	-40	-52
1962	-25	-21	-29	-10	-29	-22	-1	-17	-5	-30	-2	-25	-216	-71	-68	-40	-37
1963	-10	-13	-13	-14	-8	-11	-3	-8	-23	-17	-28	-17	-165	-48	-35	-22	-68
1964	-21	-8	-1	-19	-21	-9	15	-11	-24	-5	-36	-33	-173	-46	-41	-5	-65
1965	-17	-15	-15	-6	-2	-13	-14	-16	-28	-14	-17	-26	-183	-65	-23	-43	-59
1966	-19	-34	-43	-26	8	8	-21	-15	-16	-23	-14	-21	-216	-79	-61	-28	-53
1967	-8	-8	-42	-3	2	-10	-8	5	15	-14	-8	-21	-100	-37	-43	-13	-7
1968	-34	-22	-39	-19	4	-1	13	-8	1	-27	-14	-16	-162	-77	-54	4	-40
1969	-29	-15	-19	-26	-3	6	-6	14	-11	-26	-24	5	-134	-60	-48	14	-61
1970	-7	-14	-34	-20	11	31	-9	8	0	-12	-18	-7	-71	-16	-43	30	-30
1971	-26	-17	-19	-11	4	-3	-6	-4	0	-11	-29	-24	-146	-50	-26	-13	-40
1972	10	-7	-16	-22	1	-18	11	7	-15	-12	-42	-27	-130	-21	-37	0	-69
1973	-2	-24	-18	-41	-9	0	11	-8	-7	-16	-24	-36	-174	-53	-68	3	-47
1974	-20	-25	0	-13	-14	-12	-17	-9	-26	-9	-13	-15	-173	-81	-27	-38	-48
1975	-29	-8	-28	-9	-23	-11	-5	2	-20	-9	-21	-18	-179	-52	-60	-14	-50
1976	-38	3	4	-10	-15	-6	15	26	5	0	-7	-4	-27	-53	-21	35	-2
1977	-32	-26	-30	-12	-3	-13	3	-15	-6	-20	-27	3	-178	-62	-45	-25	-53
1978	-25	-15	-24	-14	-9	-12	-3	2	-20	-11	-18	-13	-162	-37	-47	-13	-49
1979	-19	-15	-35	-43	-23	-7	-12	-12	-26	-5	-26	-14	-237	-47	-101	-31	-57
1980	-16	5	-22	-21	-9	-4	8	9	-1	-11	-30	-36	-128	-25	-52	13	-42
1981	-14	-18	-31	-12	0	-10	-4	-7	-19	-27	-11	-24	-177	-68	-43	-21	-57
1982	-23	-5	-16	-24	-19	-4	8	-6	-20	-20	-32	-25	-186	-52	-59	-2	-72
1983	-36	-11	-25	-32	-22	8	3	1	-14	-44	-24	-29	-225	-72	-79	12	-82
1984	-25	-3	-9	-10	-2	-6	-18	3	-10	-26	-16	2	-120	-57	-21	-21	-52
1985	-18	-19	-11	-20	-7	4	-8	-24	-19	-16	-19	-48	-205	-35	-38	-28	-54
1986	-32	2	-6	-7	-22	7	-16	7	-12	-13	-31	-16	-139	-78	-35	-2	-56
1987	5	-27	-8	-14	-9	0	13	2	-16	-16	-16	-29	-115	-38	-31	15	-48
1988	-11	-28	-24	-15	-12	16	-3	1	-10	-6	-16	-7	-115	-68	-51	14	-32
1989	-18	-18	-17	-10	-19	9	17	-3	-5	-12	-13	-16	-105	-43	-46	23	-30
1990	-23	-25	-23	7	15	-1	4	-13	-8	-14	-29	-15	-125	-64	-1	-10	-51
1991	-15	-5	-12	-9	-7	-2	14	7	-19	-13	-17	-8	-86	-35	-28	19	-49
1992	-13	-18	-24	-28	11	5	21	-14	-4	-11	-22	-21	-118	-39	-41	12	-37
1993	-27	-11	-27	-4	-22	-14	-16	-23	5	-8	20	-34	-161	-59	-53	-53	17
1994	-41	2	-35	-26	-12	-9	25	29	-9	-5	-15	-21	-117	-73	-73	45	-29
1995	-33	-32	-23	-14	-3	-1	-4	-6	5	-21	-10	-5	-147	-86	-40	-11	-26
1996	8	-2	2	-16	0	-15	21	12	-5	-27	-15	-13	-50	1	-14	18	-47
1997	-4	-20	-24	-12	-15	3	20	7	-9	-27	-9	7	-83	-37	-51	30	-45

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	An	Win	Spr	Sum	Aut
1998	-27	-28	-21	-15	2	-6	-23	-22	-4	-29	-19	-18	-210	-48	-34	-51	-52
1999	-27	-29	-34	-9	-6	23	-10	-13	3	-20	-7	-23	-152	-74	-49	0	-24
2000	-25	-32	-26	-11	-10	2	8	-6	5	-7	-15	-23	-140	-80	-47	4	-17
2001	-13	-15	-32	-13	-22	-1	-4	-10	-2	-6	-4	-3	-125	-51	-67	-15	-12
2002	-12	-35	-21	-7	-10	17	4	5	-3	-1	-3	-5	-71	-50	-38	26	-7
2003	-25	-10	-14	-2	-9	11	3	1	1	-19	-19	-21	-103	-40	-25	15	-37
2004	-29	-24	-5	-13	-24	-11	0	1	-21	-14	-22	-17	-179	-74	-42	-10	-57
2005	-22	0	-27	-18	-28	-9	16	-14	-18	-13	-16	-7	-156	-39	-73	-7	-47
2006	12	-14	-32	-21	-5	-1	8	2	-2	-24	-15	-23	-115	-9	-58	9	-41
2007	-28	-18	-15	-5	-28	-13	-19	-5	-10	-2	-13	-12	-168	-69	-48	-37	-25
2008	-18	-14	-36	-19	-2	-10	2	6	2	-20	-21	-2	-132	-44	-57	-2	-39
2009	-2	-25	-27	-5	8	8	-19	-6	-15	-1	-15	-4	-103	-29	-24	-17	-31
2010	-2	-43	-22	-20	-19	-4	9	4	-10	-12	-18	-19	-156	-49	-61	9	-40
2011	-24	-7	0	0	-3	-5	-2	-11	-8	-16	-4	-21	-101	-50	-3	-18	-28
2012	-9	-4	-16	-19	-23	-5	-6	11	-13	-20	-31	-7	-142	-34	-58	0	-64
<b>1951-2012</b>																	
<b>Mean</b>	<b>-18</b>	<b>-16</b>	<b>-21</b>	<b>-16</b>	<b>-9</b>	<b>-3</b>	<b>0</b>	<b>-3</b>	<b>-9</b>	<b>-14</b>	<b>-17</b>	<b>-18</b>	<b>-143</b>	<b>-52</b>	<b>-46</b>	<b>-5</b>	<b>-40</b>
<b>σn</b>	12	12	12	9	11	11	12	11	10	10	10	12	47	20	18	22	20
<b>Max</b>	<b>12</b>	<b>5</b>	<b>4</b>	<b>7</b>	<b>15</b>	<b>31</b>	<b>25</b>	<b>29</b>	<b>15</b>	<b>10</b>	<b>20</b>	<b>7</b>	<b>-27</b>	<b>5</b>	<b>-1</b>	<b>45</b>	<b>17</b>
<b>Year</b>	2006	1980	1976	1990	1990	1970	1994	1994	1967	1951	1993	1997	1976	1954	1990	1994	1993
<b>Min</b>	<b>-41</b>	<b>-43</b>	<b>-43</b>	<b>-43</b>	<b>-29</b>	<b>-22</b>	<b>-23</b>	<b>-24</b>	<b>-28</b>	<b>-44</b>	<b>-42</b>	<b>-48</b>	<b>-237</b>	<b>-86</b>	<b>-101</b>	<b>-53</b>	<b>-82</b>
<b>Year</b>	1994	2010	1966	1979	1962	1962	1998	1985	1965	1983	1972	1985	1979	1995	1979	1993	1983
<b>1978-2012</b>																	
<b>Mean</b>	<b>-18</b>	<b>-16</b>	<b>-21</b>	<b>-14</b>	<b>-10</b>	<b>-1</b>	<b>1</b>	<b>-2</b>	<b>-9</b>	<b>-15</b>	<b>-16</b>	<b>-16</b>	<b>-139</b>	<b>-50</b>	<b>-45</b>	<b>-2</b>	<b>-41</b>
<b>σn</b>	12	12	10	10	11	9	13	11	8	9	10	11	43	20	21	22	19
<b>Max</b>	<b>12</b>	<b>5</b>	<b>2</b>	<b>7</b>	<b>15</b>	<b>23</b>	<b>25</b>	<b>29</b>	<b>5</b>	<b>-1</b>	<b>20</b>	<b>7</b>	<b>-50</b>	<b>1</b>	<b>-1</b>	<b>45</b>	<b>17</b>
<b>Year</b>	2006	1980	1996	1990	1990	1987	1994	1994	1993	2002	1993	1997	1996	1996	1990	1994	1993
										2009							
<b>Min</b>	<b>-41</b>	<b>-43</b>	<b>-36</b>	<b>-43</b>	<b>-28</b>	<b>-15</b>	<b>-23</b>	<b>-24</b>	<b>-26</b>	<b>-44</b>	<b>-32</b>	<b>-48</b>	<b>-237</b>	<b>-86</b>	<b>-101</b>	<b>-53</b>	<b>-82</b>
<b>Year</b>	1994	2010	2008	1979	2005	1996	1998	1985	1979	1983	1982	1985	1979	1995	1979	1993	1983
					2008												

σn – standard deviation

**A1.3. Monthly, annual and seasonal values of circulation type C (cyclonicity index) in 1951–2012.**

An – annual, Win – winter (December-February), Spr – spring (March-May),  
Sum – summer (June-August), Aut – autumn (September-November)

Year	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	An	Win	Spr	Sum	Aut
1951	8	7	-1	0	-11	8	-20	-16	10	22	-10	15	12	21	-12	-28	22
1952	15	14	-14	-5	-12	-10	-7	13	18	-15	32	2	31	44	-31	-4	35
1953	19	15	5	-5	-3	-19	-17	0	19	23	26	36	99	36	-3	-36	68
1954	20	7	11	-3	-28	14	-3	-16	0	16	16	19	53	63	-20	-5	32
1955	12	4	4	4	-4	-9	11	20	6	6	-7	4	51	35	4	22	5
1956	15	3	5	-13	11	-4	-38	-18	15	1	12	14	3	22	3	-60	28
1957	17	-19	5	12	-18	-6	-23	10	-14	28	14	6	12	12	-1	-19	28
1958	11	-1	-17	-20	-25	-2	-2	-24	14	10	12	4	-40	16	-62	-28	36
1959	-7	22	16	-3	-3	15	21	6	-4	5	7	6	81	19	10	42	8
1960	2	-14	11	16	-5	-7	-13	-24	-6	-4	3	9	-32	-6	22	-44	-7
1961	8	14	28	6	-4	12	-12	-26	7	15	1	9	58	31	30	-26	23
1962	15	8	-22	7	-23	-1	9	-11	2	11	17	0	12	32	-38	-3	30
1963	5	-7	-1	-2	8	-18	12	-11	6	18	-1	1	10	-2	5	-17	23
1964	9	20	21	-14	-5	6	17	-19	-2	10	3	25	71	30	2	4	11
1965	6	-3	3	3	-15	1	-8	-13	-3	4	3	0	-22	28	-9	-20	4
1966	-7	-3	-8	-27	-17	4	-7	-11	17	-22	30	18	-33	-10	-52	-14	25
1967	-19	20	10	1	-29	18	4	-8	10	14	19	-17	23	19	-18	14	43
1968	3	22	25	-12	-18	11	2	26	-2	-21	-6	-1	29	8	-5	39	-29
1969	-15	18	-9	-15	-26	-31	-22	-28	13	29	26	28	-32	2	-50	-81	68
1970	-2	-17	3	-22	6	13	3	5	-3	16	-13	16	5	9	-13	21	0
1971	6	12	2	-3	0	-22	22	11	4	21	17	19	89	34	-1	11	42
1972	21	15	17	-4	1	-25	9	22	14	13	10	17	110	55	14	6	37
1973	32	27	28	15	-7	12	3	18	11	19	19	16	193	76	36	33	49
1974	23	9	19	16	-4	-3	3	-7	19	0	8	35	118	48	31	-7	27
1975	30	20	36	24	-9	6	26	-7	33	-1	18	33	209	85	51	25	50
1976	16	18	11	11	-21	-19	15	35	19	-23	31	10	103	67	1	31	27
1977	-16	1	-4	-1	4	9	5	3	17	-3	27	8	50	-5	-1	17	41
1978	10	1	17	-15	-1	-12	-15	-6	-2	4	20	-5	-4	19	1	-33	22
1979	-1	7	4	-17	4	4	-5	5	19	-4	18	5	39	1	-9	4	33
1980	-2	13	-2	10	-15	-9	-16	6	20	17	19	20	61	16	-7	-19	56
1981	22	21	-5	6	-22	16	11	-8	3	6	26	-19	57	63	-21	19	35
1982	8	10	22	21	-23	-3	31	-1	15	5	27	21	133	-1	20	27	47
1983	27	22	17	-9	-26	19	19	28	20	32	13	4	166	70	-18	66	65
1984	12	25	-6	2	1	2	2	-11	-1	14	9	15	64	41	-3	-7	22
1985	-5	1	5	2	-24	-11	-21	-10	14	29	11	4	-5	11	-17	-42	54
1986	13	-7	32	-17	-7	14	1	-17	17	30	22	-11	70	10	8	-2	69
1987	-2	-11	-16	7	-3	-29	22	11	-1	20	16	16	30	-24	-12	4	35
1988	19	-6	7	16	-16	13	-4	-26	20	6	17	1	47	29	7	-17	43
1989	8	11	12	-10	10	1	25	-4	13	12	14	17	109	20	12	22	39
1990	19	20	18	20	8	-27	-12	-21	1	17	11	22	76	56	46	-60	29
1991	31	22	-4	8	2	-30	-10	8	13	3	2	18	63	75	6	-32	18
1992	30	4	19	-3	8	-1	9	-5	6	-4	8	22	93	52	24	3	10
1993	22	27	10	1	-14	-20	-35	-13	-14	7	7	18	-4	71	-3	-68	0
1994	7	-2	29	13	-18	12	15	21	16	7	10	26	136	23	24	48	33
1995	11	25	11	7	-13	6	17	16	-1	-10	-10	13	72	62	5	39	-21
1996	15	-6	9	2	-14	-4	-6	5	14	12	37	-12	52	22	-3	-5	63
1997	21	11	9	8	-18	-17	-13	12	20	8	-4	21	58	20	-1	-18	24

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	An	Wi	Sp	Su	Au
1998	-7	0	14	-33	1	-20	-30	-13	-17	13	7	29	-56	14	-18	-63	3
1999	30	22	-2	4	-36	25	25	-5	15	13	33	24	148	81	-34	45	61
2000	32	19	20	-9	3	9	9	14	2	9	13	10	131	75	14	32	24
2001	22	4	0	-7	-9	-7	4	-9	14	7	32	10	61	36	-16	-12	53
2002	31	28	4	5	-31	8	-5	3	-6	-16	-3	4	22	69	-22	6	-25
2003	15	20	29	-10	-10	-19	-9	-24	25	16	12	25	70	39	9	-52	53
2004	19	11	4	8	-6	0	9	-10	12	24	23	36	130	55	6	-1	59
2005	30	15	-2	-6	4	-5	4	14	33	10	27	-4	120	81	-4	13	70
2006	20	19	-4	22	-12	22	19	4	8	-1	35	33	165	35	6	45	42
2007	30	-3	39	25	-6	7	-5	18	26	33	16	19	199	60	58	20	64
2008	19	24	18	-14	-12	4	-4	6	4	13	15	23	96	62	-8	6	32
2009	20	7	29	-5	5	-10	-14	-25	20	18	27	-1	71	50	29	-49	65
2010	23	-7	4	8	-5	1	5	-13	8	28	7	12	71	15	7	-7	43
2011	16	9	31	27	-4	-11	5	-10	22	21	17	28	151	37	54	-16	60
2012	10	32	24	5	17	-2	14	12	21	9	9	8	159	70	46	24	39
<b>1951-2012</b>																	
<b>Mean</b>	<b>13</b>	<b>10</b>	<b>9</b>	<b>1</b>	<b>-9</b>	<b>-2</b>	<b>1</b>	<b>-2</b>	<b>10</b>	<b>10</b>	<b>14</b>	<b>13</b>	<b>66</b>	<b>35</b>	<b>1</b>	<b>-3</b>	<b>33</b>
$\sigma_n$	13	12	14	13	12	14	16	15	11	13	12	13	62	27	24	32	23
<b>Max</b>	<b>32</b>	<b>32</b>	<b>39</b>	<b>27</b>	<b>17</b>	<b>25</b>	<b>31</b>	<b>35</b>	<b>33</b>	<b>33</b>	<b>37</b>	<b>36</b>	<b>209</b>	<b>85</b>	<b>58</b>	<b>66</b>	<b>70</b>
Year	2000	2012	2007	2011	2012	1999	1982	1976	1975	2007	1996	1953	1975	1975	2007	1983	2005
									2005								
<b>Min</b>	<b>-19</b>	<b>-19</b>	<b>-22</b>	<b>-33</b>	<b>-36</b>	<b>-31</b>	<b>-38</b>	<b>-28</b>	<b>-17</b>	<b>-23</b>	<b>-13</b>	<b>-19</b>	<b>-56</b>	<b>-24</b>	<b>-62</b>	<b>-81</b>	<b>-29</b>
Year	1967	1957	1962	1998	1999	1969	1956	1969	1998	1976	1970	1981	1998	1987	1958	1969	1968
<b>1978-2012</b>																	
<b>Mean</b>	<b>16</b>	<b>11</b>	<b>11</b>	<b>2</b>	<b>-9</b>	<b>-2</b>	<b>1</b>	<b>-1</b>	<b>11</b>	<b>12</b>	<b>16</b>	<b>13</b>	<b>81</b>	<b>40</b>	<b>5</b>	<b>-2</b>	<b>38</b>
$\sigma_n$	11	12	13	13	12	14	16	14	11	11	11	13	57	27	22	34	24
<b>Max</b>	<b>32</b>	<b>32</b>	<b>39</b>	<b>27</b>	<b>17</b>	<b>25</b>	<b>31</b>	<b>28</b>	<b>33</b>	<b>33</b>	<b>37</b>	<b>36</b>	<b>199</b>	<b>81</b>	<b>58</b>	<b>66</b>	<b>70</b>
Year	2000	2012	2007	2011	2012	1999	1982	1983	2005	2007	1996	2004	2007	2005	2007	1983	2005
<b>Min</b>	<b>-7</b>	<b>-11</b>	<b>-16</b>	<b>-33</b>	<b>-36</b>	<b>-30</b>	<b>-35</b>	<b>-26</b>	<b>-17</b>	<b>-16</b>	<b>-10</b>	<b>-19</b>	<b>-56</b>	<b>-24</b>	<b>-34</b>	<b>-68</b>	<b>-25</b>
Rok	1998	1987	1987	1998	1999	1991	1993	1988	1998	2002	1995	1981	1998	1987	1999	1993	2002

$\sigma_n$  – standard deviation

## APPENDIX 2. LF<sub>1-4</sub> INDEX

Mean SST [°C] in January-April, in the grid 2x2° with centre coordinates 68°N, 8°E.

### LF<sub>1-4</sub> index, version 2

Source of data: set NOAA NCDC ERSST version 2 (Smith T.M., Reynolds R.W., 2004, Improved extended reconstruction of SST [1854–1997]. *Journal of Climate*, 17 (12): 2466–2477).

Year	00	01	02	03	04	05	06	07	08	09
1880	6.08	6.44	6.00	6.39	6.46	6.15	6.26	6.43	6.12	6.21
1890	6.20	6.06	6.19	6.27	6.27	6.27	6.28	6.30	6.18	6.38
1900	6.10	6.24	5.99	6.35	6.08	5.93	6.06	5.92	6.04	6.06
1910	6.09	5.90	6.28	6.02	6.28	6.41	6.29	6.18	6.25	6.18
1920	6.31	6.11	6.16	6.09	5.95	6.17	6.30	6.36	6.12	5.99
1930	6.55	6.30	6.35	6.38	6.52	6.45	6.64	6.55	6.62	6.65
1940	6.35	6.02	6.24	6.55	6.89	6.35	6.25	6.20	6.24	6.21
1950	6.38	6.07	6.07	5.95	6.05	6.04	6.13	6.33	6.06	6.20
1960	6.36	6.55	6.29	6.22	6.22	6.25	6.39	6.45	6.34	6.33
1970	6.40	6.51	6.35	6.37	6.32	6.48	5.99	6.19	6.00	6.01
1980	6.08	5.99	5.85	5.99	5.75	5.86	5.84	5.96	6.28	6.49
1990	6.56	6.25	6.13	6.10	6.20	6.38	6.07	6.15	6.54	6.55
2000	6.52	6.74	6.73	6.60	6.76	6.72	6.76	6.97	7.01	6.79

### LF<sub>1-4</sub> index, version 3

Source of data: set NOAA NCDC ERSST version 3b ([1] Smith T.M., Reynolds R.W, Peterson T.C., Lawrimore J., 2008, Improvements to NOAA's historical merged land-ocean surface temperature analysis (1880–2006). *Journal of Climate*, 21 (10): 2283–2296; [2] Xue Y., Smith T.M., Reynolds R.W., 2003, Interdecadal changes of 30-yr SST normals during 1871–2000. *Journal of Climate*, 16 (10): 1601–1612).

Year	00	01	02	03	04	05	06	07	08	09
1880	5.74	6.05	5.69	5.95	6.15	5.86	5.88	6.03	5.72	5.91
1890	5.88	5.68	5.74	5.84	5.89	5.82	5.95	5.96	5.87	6.14
1900	6.00	6.19	5.78	6.02	5.68	5.54	5.79	5.56	5.72	5.58
1910	5.82	5.53	5.89	5.65	6.07	6.04	5.96	5.88	5.94	5.84
1920	6.00	5.76	5.77	5.72	5.58	5.88	5.94	6.15	5.89	5.81
1930	6.36	6.01	6.17	6.26	6.41	6.33	6.51	6.27	6.36	6.41
1940	6.34	6.17	6.15	6.15	6.57	6.16	5.98	5.96	5.98	6.05
1950	6.22	5.93	5.90	5.77	5.86	5.88	5.90	6.12	5.81	5.91
1960	6.07	6.22	6.02	5.99	6.01	6.02	6.27	6.35	6.17	6.11
1970	6.21	6.34	6.18	6.21	6.18	6.32	5.85	6.06	6.04	5.92
1980	6.01	5.91	5.86	5.83	5.74	5.79	5.80	5.84	6.29	6.46
1990	6.53	6.21	5.97	6.00	6.15	6.32	5.90	6.14	6.27	6.37
2000	6.40	6.62	6.72	6.63	6.73	6.59	6.59	6.84	6.81	6.61
2010	6.61	6.63	6.46	-	-	-	-	-	-	-

### APPENDIX 3. DG<sub>3L</sub> INDEX

The weighted mean from three consecutive years from the mean SST in February, August and September, on the surface 2x2° with centre coordinates 38°N, 56°W (see footnote 22 in the Chapter 3.3.3). Index standardized relative to the mean from 1901–2000.

#### DG<sub>3L</sub> index version 2

Source of data: set NOAA NCDC ERSST version 2 (Smith T.M., Reynolds R.W., 2004, Improved extended reconstruction of SST [1854–1997]. *Journal of Climate*, 17 (12): 2466–2477).

Year	00	01	02	03	04	05	06	07	08	09
1880	-0.34	-0.21	-0.36	-0.31	-0.14	-0.19	-0.78	-1.03	-1.73	-1.77
1890	-1.29	-0.90	-0.89	-1.73	-1.65	-1.49	-1.04	-0.94	-0.41	-1.28
1900	-1.12	-0.81	-1.70	-2.49	-2.07	-1.36	-0.56	-1.46	-1.57	-2.26
1910	-1.65	-1.27	-1.68	-1.75	-1.31	-0.37	-0.78	-0.82	-1.15	-1.00
1920	-0.56	-0.48	0.26	-0.18	-0.04	-0.03	-0.32	0.27	0.71	0.94
1930	1.27	1.06	0.87	1.11	1.34	1.29	0.82	1.69	1.75	1.74
1940	0.37	-0.21	-0.25	0.92	1.41	1.29	0.85	0.93	0.12	0.43
1950	0.79	1.40	0.95	0.70	0.69	0.58	0.14	-0.06	0.33	0.07
1960	0.69	0.99	1.06	0.67	-0.52	-0.65	-1.30	-0.23	-0.86	-0.49
1970	-0.84	-0.72	-0.90	-0.79	-0.28	-0.08	0.03	-0.15	-0.17	-1.03
1980	-0.86	-1.39	-0.72	-0.44	0.01	-0.23	-0.83	-0.75	0.12	0.64
1990	1.17	0.91	1.08	0.70	1.33	0.80	1.00	0.64	0.99	1.32
2000	1.37	1.42	1.27	2.05	1.84	1.79	1.52	1.05	1.68	2.22

#### DG<sub>3L</sub> index, version 3

Source of data: set NOAA NCDC ERSST version 3b. ([1] Smith T.M., Reynolds R.W., Peterson T.C., Lawrimore J., 2008, Improvements to NOAA's historical merged land-ocean surface temperature analysis (1880–2006). *Journal of Climate*, 21 (10): 2283–2296; [2] Xue Y., Smith T.M., Reynolds R.W., 2003, Interdecadal changes of 30-yr SST normals during 1871–2000. *Journal of Climate*, 16 (10): 1601–1612).

Year	00	01	02	03	04	05	06	07	08	09
1880	-0.45	-0.31	-0.48	-0.19	0.23	0.04	-0.73	-1.15	-1.73	-1.43
1890	-0.85	-0.26	-0.29	-1.12	-1.26	-0.85	-0.32	-0.13	0.51	-0.70
1900	-0.41	0.18	-0.37	-1.07	-0.67	0.03	0.67	-0.68	-1.05	-1.94
1910	-1.41	-1.06	-1.66	-1.81	-1.54	-0.57	-1.14	-1.11	-1.25	-1.14
1920	-0.82	-1.09	-0.29	-0.77	-0.50	-0.52	-0.76	0.12	0.79	1.19
1930	1.50	1.12	0.67	0.97	1.31	1.37	0.87	1.70	1.77	1.87
1940	0.44	-0.12	-0.10	0.87	1.48	1.33	0.81	0.80	-0.10	0.30
1950	0.75	1.44	1.08	0.81	0.84	0.61	0.15	-0.13	0.32	-0.06
1960	0.73	1.08	1.31	1.00	-0.28	-0.51	-1.38	-0.16	-0.84	-0.56
1970	-1.05	-0.98	-1.20	-1.10	-0.56	-0.30	-0.25	-0.46	-0.45	-1.44
1980	-1.17	-1.85	-1.09	-0.81	-0.26	-0.58	-1.31	-1.18	-0.08	0.55
1990	1.09	0.69	0.81	0.29	1.13	0.65	0.97	0.60	1.19	1.55
2000	1.65	1.46	1.21	2.05	1.84	1.93	1.56	1.12	1.77	2.34
2010	1.83	1.31	1.50	-	-	-	-	-	-	-