



DESIGN WIND SPEEDS

COUNTRY-BY-COUNTRY

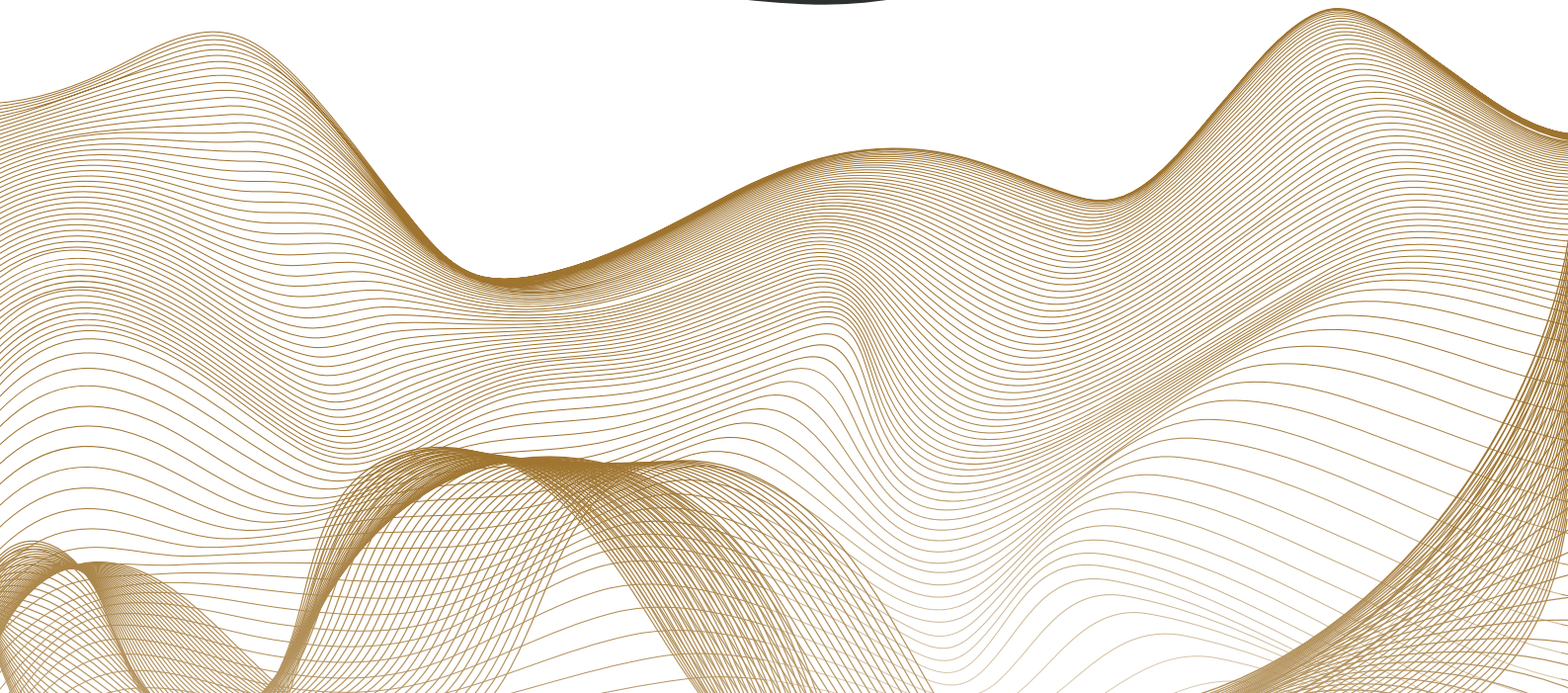


TABLE OF CONTENTS

Introduction	1
Disclaimer	1
Our Designs	3 - 5

Countries

Argentina	6
Australia	7 - 8
Austria	9
Belgium	10
Brazil	11
Bulgaria	12
Canada	13
China	14
Croatia	15
Cyprus	16
Denmark	17
East Timor	18
England	19
Estonia	20
Fiji	21
Finland	22
France	23
French Polynesia	24
Germany	25
Ghana	26
Greece	27
Hungary	28

TABLE OF CONTENTS

Iceland	29
India	30
Indonesia	31
Iran	32
Ireland	33
Italy	34
Latvia	35
Mexico	36
Netherlands	37
New Caledonia	38
New Zealand	39 - 40
Norway	41
Papua New Guinea	42
Poland	43
Romania	44
Russia	45
Somoa	46
Scotland	47
Solomon Islands	48
South Africa	49
Spain	50
Sweden	51
Switzerland	52
Thailand	53
Tonga	54
Turkey	55
Ukraine	56
United States	57
Vanuatu	58
Wales	59

INTRODUCTION

This document provides a catalogue of design wind speed information from around the world.

Classification is done on a national basis, which is published as part of the building code.

For small countries without wind-loading standards, or building codes with wind-loading information, it would be appropriate to use information from neighbouring countries.

DISCLAIMER

It should be noted that wind-loading codes and standards are constantly under revision, and the values of design wind speed, zoning systems and so on given in this appendix may change periodically.

Please consult your local building authority if you are unsure what design wind speed is required in your location.

We have no liability for the data provided, nor does the author of the source material.

OUR DESIGNS



Carport

Regional ultimate wind speed
64.05 (m/s)

Regional ultimate wind speed
69.30 (m/s)



Carport



Carport

Regional ultimate wind speed
64.05 (m/s)

Regional ultimate wind speed
70.00 (m/s)



Carport

OUR DESIGNS



Carport

Regional ultimate wind speed

69.30 (m/s)



Gazebo

Regional ultimate wind speed

69.3 (m/s)



Gazebo

Regional ultimate wind speed

69.30 (m/s)



Shed

Regional ultimate wind speed

64.05 (m/s)

OUR DESIGNS



Shed

Regional ultimate wind speed

64.05 (m/s)



Shed

Regional ultimate wind speed

64.05 (m/s)



Shed

Regional ultimate wind speed

64.05 (m/s)



Shed

Regional ultimate wind speed

64.05 (m/s)

OUR DESIGNS



Shed

Regional ultimate wind speed
64.05 (m/s)



ARGENTINA

Argentina is a large country and is affected by a range of different types of wind storms, although tropical cyclones do not occur. Large extra-tropical depressions are the dominant winds in the south (Patagonia and Tierra del Fuego). In the northeast (Cordoba region), the dominant winds are caused by severe thunderstorms; tornadoes and downbursts ('tormen- tas'). Downslope and 'fonda' winds with severe gustiness occur in the Andes.

CLASSIFICATION: 35-55 (M/S)

(1-sec gust)

Source: Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



AUSTRALIA

Australia has a variety of severe wind types with large extra-tropical gales, 'East Coast lows' as well as severe tropical cyclones that can affect the coastline. As a result the country has been divided into four regions of classification, they are labelled from A-D with increase design wind speeds required.

Wind speeds for structural design are given in AS/NZS 1170.2:2021 – Structural Design Actions – Wind Action.

CLASSIFICATION: REGION A (0-5)- 41.0 (M/S)

CLASSIFICATION: REGION B (1 AND 2)- 51.9 (M/S)

CLASSIFICATION: REGION C- 64.5 (M/S)

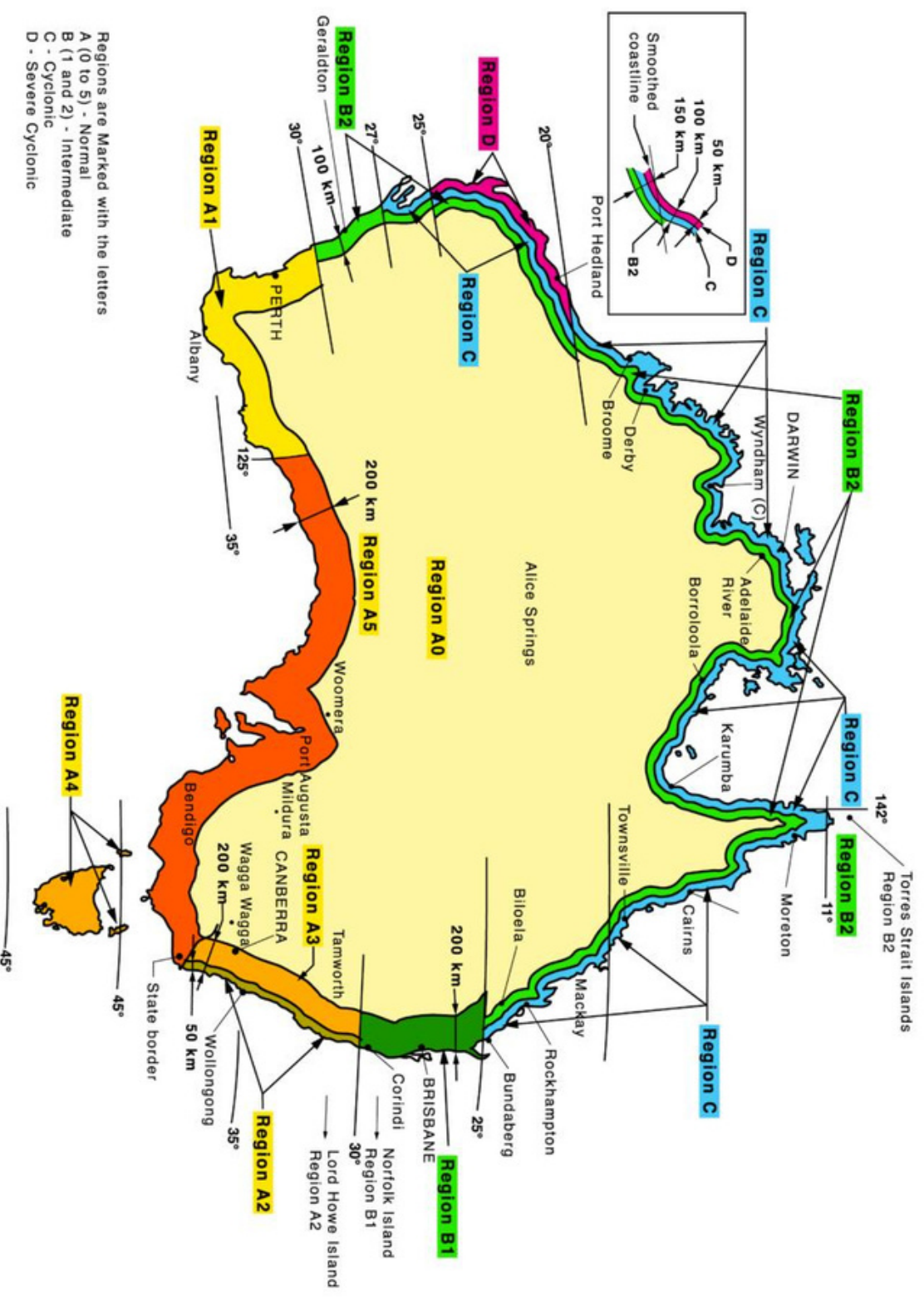
CLASSIFICATION: REGION D- 88.0 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>

Wind regions for Australia according to As/NZS 1170.2:2021



Regions are Marked with the letters
 A (0 to 5) - Normal
 B (1 and 2) - Intermediate
 C - Cyclonic
 D - Severe Cyclonic



AUSTRIA

No values were specified in the original draft Eurocode (C.E.N., 1994). However, the wind climate should be similar to southern Germany and Switzerland.

CLASSIFICATION: 35 - 45+ (M/S)

(1-sec gust)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



BELGIUM

The original draft Eurocode (C.E.N., 1994) specified a single value of 10-min mean wind speed with a 50-year return period, of 26.2 m/s.

CLASSIFICATION: 22 - 30+ (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



BRAZIL

Brazil has to propensity for extreme winds due to large tropical depression systems and local thunderstorms. The coast line of the South Atlantic does not experience tropical cyclones due to the low water temperature. The Brazilian wind-loading code of 1987 (NBR-6123, 1987) gave isotachs of 3-s gust speeds with 50-year return period varying from 30 (north half of the country) to 50 m/s (extreme south).

CLASSIFICATION - NORTH: <35 (M/S)

CLASSIFICATION - SOUTH CENTRAL: 35 - 45+ (M/S)

CLASSIFICATION - EXTREME SOUTH: 45- 55+ (M/S)

(1-sec gust)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



BULGARIA

No values were specified in the original draft Eurocode (C.E.N., 1994). However, the wind climate should be similar to southern Germany and Switzerland.

CLASSIFICATION: 35 - 45+ (M/S)

(1-sec gust)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



Extreme winds in Canada are primarily generated by large-scale synoptic systems. An appendix to the National Building Code of Canada (NRC, 2005) gives values of dynamic pressures. The equivalent hourly mean wind speeds, with a 30-year return period, range from 24 to 28 m/s in the main populated area around the Great Lakes (including Toronto, Montreal and Ottawa), to 30-35 m/s in Newfoundland, and in the Hudson's Bay area.

CLASSIFICATION - NEWFOUNDLAND & NORTH: 30-35 (M/S)

CLASSIFICATION - REST OF CANADA: 22 - 30+ (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



CHINA

China is a large country with a range of extreme wind types ranging from severe gales arising from synoptic systems in Siberia in the northwest, to typhoons along the southern coastline. There is a region with downslope winds.

**CLASSIFICATION - CENTRAL MAINLAND:
22-30 (M/S)**

**CLASSIFICATION - NORTHWEST & INNER SOUTHERN
COAST: 30 - 35+ (M/S)**

**CLASSIFICATION - OUTER SOUTHERN COAST AND
ISLANDS: 35 - 40+ (M/S)**

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



CROATIA

Croatia has an extreme wind climate, most of the country has been assigned a value of 25 m/s for the 10-min mean wind speed with a return period of 50 years. The exceptions are some valleys and mountain passes with accelerated bora (downslope) winds, in these regions, it is stated that values of 38–55 m/s were obtained.

CLASSIFICATION - CENTRAL: 25 (M/S)

CLASSIFICATION - COASTAL: 38 - 55+ (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



CYPRUS

For the Island of Cyprus in the Mediterranean is deals with frequent moderate winds, particularly in winter.

CLASSIFICATION - LIMASSOL & NICOSIA: 24 (M/S)

CLASSIFICATION - REST OF THE COUNTRY: 40 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>

 **DENMARK**

Wind speed observations have been made in Denmark since the 1870s. The dominant source of extreme winds in Denmark is severe extra-tropical depressions moving in from the north Atlantic Ocean. The draft Eurocode (C.E.N., 1994) specified a single value of 10-min mean wind speed with a 50-year return period, for Denmark, of 27.0 m/s.

CLASSIFICATION : 22-30 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



EAST TIMOR

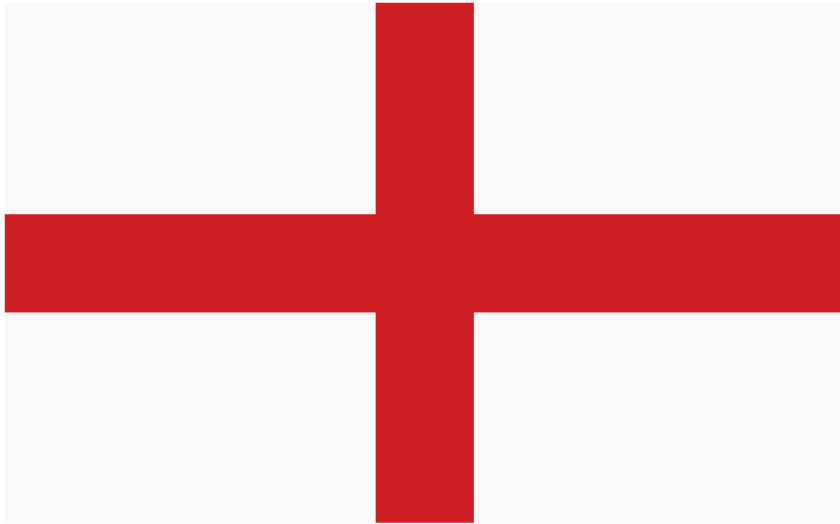
East Timor has a high coastal wind speeds, particularly during the wet season when tropical lows and cyclones are not uncommon.

CLASSIFICATION : 45-57 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



ENGLAND

The U.K. has a close network of meteorological stations, and high-quality data. The main strong wind source is severe gales moving in from the Atlantic on the west. Design winds are generally stronger on the west, reducing further east. The design wind speed data is known as the British Standard BS6399:2. BS6399:2 contained a map of 1-h mean wind speeds (50-year return period) ranging from 20 to 30 m/s. The latter values occur only for the Shetland Islands in the north. The map also covers the whole of Ireland.

CLASSIFICATION : 22-30 (M/S)

(1 hour mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



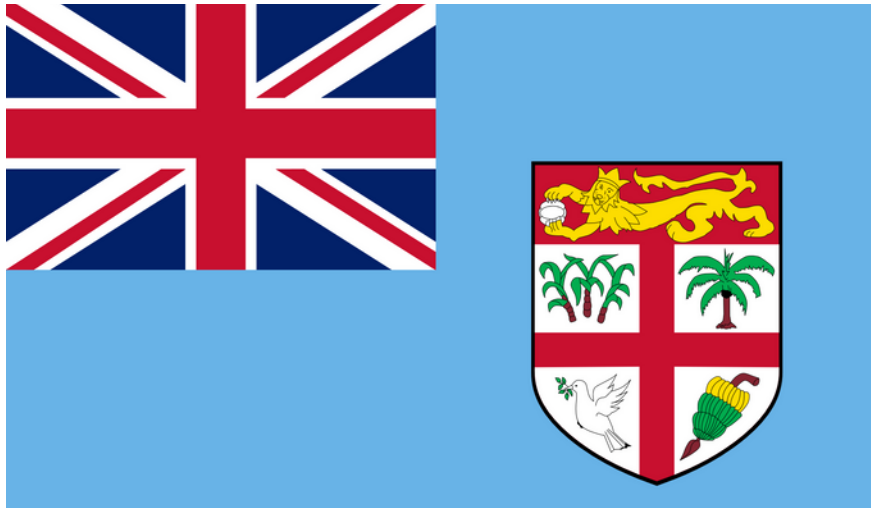
As with Latvia and Lithuania, the coastline of Estonia is exposed to gales from the Baltic Sea. The National Annex to the Eurocode, EN-1991-1-4, gives a single value of basic wind speed (10-minute mean, 50-year average recurrence interval) of 21 m/s for the whole country

CLASSIFICATION : 22-30 (M/S)

(10-minute mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The Fijian islands are subject to periodic visits from tropical cyclones and as a consequence experience high winds. The National building code of Fiji mandates 66 m/s for housing.

CLASSIFICATION : 55-66 (M/S)

(1-sec-gusts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



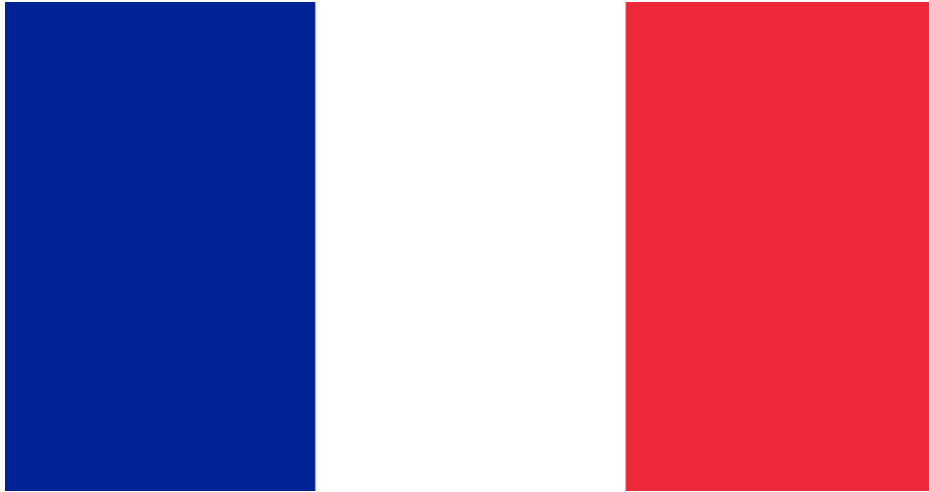
The original draft Eurocode (C.E.N., 1994) specified a single value of 10-min mean wind speed with a 50-year return period, for Finland, of 23 m/s.

CLASSIFICATION : 22-30 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>

 **FRANCE**

Like other Western European countries, the extreme wind climate of France is dominated by synoptic gales from large depression systems moving in from the Atlantic Ocean. The original draft Eurocode (C.E.N., 1994) specified four values of 10-min mean wind speed with a 50-year return period, for four zones in metropolitan France, ranging from 24 to 30.5 m/s. The highest values occur for Zone 4, which includes parts of Brittany and Normandy, the Mediterranean coastline and Eastern Corsica.

CLASSIFICATION - BRITTANY, NORMAN, MEDITERRANEAN COASTLINE AND EASTERN CORSICA : 30-35 (M/S)

CLASSIFICATION - REST OF THE COUNTRY : 24-30.5 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



FRENCH POLYNESIA

French Polynesia is subject to periodic visits from tropical cyclones and as a consequence experience high winds.

CLASSIFICATION - MARTINIQUE & GUADELOUPE: 44.2-58.5 (M/S)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



GERMANY

The main source of strong winds in Germany is gales accompanying large-scale depressions moving from the west. Germany has five wind speeds with 50-year return period hourly mean speeds between 22.5 and 32.5 m/s.

CLASSIFICATION - CENTRAL: 22-30 (M/S)

CLASSIFICATION - NORTHERN GERMANY & SOUTHERN ALPINE: 22-30 (M/S)

CLASSIFICATION - NORTHWEST AND SAXONY: 22-30 (M/S)

CLASSIFICATION - NORTH SEA AND BALTIC COASTS: 30-35 (M/S)

CLASSIFICATION - NORTH SEA OFFSHORE: 30-35 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The south of Ghana, on the coast of west Africa, is subject to severe thunderstorms which may generate strong winds for short periods. Ghana's Building Code has a stated value of 29 m/s with 'maximum 3-second gusts' over a 50-year average.

CLASSIFICATION: 22-30 (M/S)

(3-sec gusts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The draft Eurocode ENV-1991-2-4 specified a 50-year return period 10-min mean wind speed for Greece, of 36 m/s for the islands and coastal areas of the mainland within 10 km of the coastline. For the rest of the country, the value is 30 m/s.

CLASSIFICATION: 30-35 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



For Hungary in eastern Europe, National Annex to the Eurocode, EN-1991-1-4, gives a single value of basic wind speed (10-minute mean, 50-year average recurrence interval) of 23.6 m/s for the whole country.

CLASSIFICATION: 22-30 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



Iceland is subject to Atlantic gales. The National Annex to the Eurocode, EN-1991-1-4 gives a single value of basic wind speed (10-minute mean, 50-year average recurrence interval) of 36 m/s for the whole country

CLASSIFICATION: 35.5-40 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



India, a large sub-continental tropical country, has a range of extreme wind zones, with extreme tropical cyclones being dominant on the east (Bay of Bengal) coast, and less frequent ones on the west coast. In inland areas, thunderstorms and monsoon winds are prevalent. The Indian Standard for Wind Loads IS875 Part 3 (Bureau of Indian Standards, 1987) provides a 50-year return period gust wind speeds ranging from 33 to 55 m/s over six regions:

CLASSIFICATION - TRIPURA, MIZORAM & LADAKH: 35-40 (M/S)

CLASSIFICATION - COASTAL STRIPS OF TAMIL NADU, MADRAS, ANDHRA PRADESH, ORISSA, GUJARAT, WEST BENGAL, CALCUTTA & ASSAM: 30-35 (M/S)

CLASSIFICATION - NORTHERN INDIA INCLUDING DELHI, CENTRAL TAMIL NADU: 30-35 (M/S)

CLASSIFICATION - COASTAL STRIP OF ARABIAN SEA, INCLUDING BOMBAY, INLAND MADHYA, PRADESH & ORISSA: 22-30 (M/S)

CLASSIFICATION - SOUTHERN INDIA: 22-30 (M/S)

CLASSIFICATION - INLAND KARNATAKA, INCLUDING BANGALORE: <22 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



INDONESIA

Like Malaysia and Singapore, Indonesia is entirely in the Equatorial zone, does not experience typhoons and design wind speeds from weak thunderstorms and monsoonal winds are low.

CLASSIFICATION: <22 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



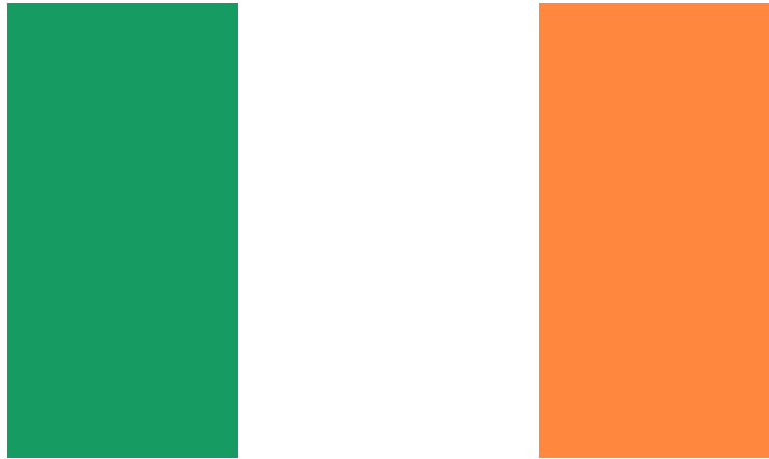
Iran is a large country, with most of the landmass and major cities at elevations of 1,000 m, or more, above sea level. Gusts of over 60 m/s have occasionally been recorded in some locations. Data from Isfahan province near the centre of the country shows a 15-minute average with an average recurrence interval of 50 years of about 36 m/s.

CLASSIFICATION: 35-40 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The main strong wind source in Ireland is severe gales moving in from the Atlantic on the west coast. Design winds are generally stronger on the west, reducing further east. The design wind speed data is known as the British Standard BS6399:2. BS6399:2 contained a map of 1-h mean wind speeds (50-year return period) ranging from 20 to 30 m/s.

CLASSIFICATION: 22-30 (M/S)

(1 hour mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



An extreme value analysis of 10-min mean wind speeds for Italy is included in the original draft Eurocode (C.E.N., 1994) shows a 10-min mean speeds with a 50-year return period, ranging from 25 to 31 m/s . The technical standard for construction has been set by ministerial decree at 27 m/s.

CLASSIFICATION: 27 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The Latvian coastline is exposed to gales from the Baltic Sea. The Latvian Building Code LNBN-003-01, (Republic of Latvia 2001, 2003) shows recorded maximum gusts - experienced at major centres during a 45-year period. For the capital, Riga, and Liepaja on the Baltic coast, these values were 31 and 48 m/s, respectively. The basic wind velocities (10-minute mean, 50-year annual recurrence interval) for Latvia in the National Annex to the Eurocode, EN-1991-1-4, range from 21 to 27 m/s

CLASSIFICATION : RIGA- <22 (M/S)

CLASSIFICATION : COASTAL STRIP - 30-35 (M/S)

CLASSIFICATION : REMAINDER OF COUNTRY- 22-30 (M/S)

(10-minute mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



MEXICO

Mexico experiences extreme winds from hurricanes on both its Pacific and Caribbean coasts. For inland areas, thunderstorms are dominant. The published isotach map shows 50-year return period 3-s gusts widely ranging from 28 m/s in the Mexico City area to 61 m/s on the Pacific coast.

CLASSIFICATION : ALVARO OBREGÓN, AZCAPOTZALCO, BENITO JUAREZ, COYOACAN, CUAUHTEMOC, MADERO, IZTACALCO, IZTAPALAPA, MIGUEL HIDALGO, VENUSTIANO CARRANZA- 39 (M/S)

CLASSIFICATION : MAGDALENA CONTRERAS, CUAJIMALPA, MILPA ALTA, TLALPAN, XOCHIMILCO - 30-35 (M/S)

(10-minute mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>

 **NETHERLANDS**

The Netherlands is exposed to gales from the North Sea on the coast. Basic velocities are published in the National Annex to the Eurocode, EN-1991-1-4.

CLASSIFICATION: NORTH HOLLAND - 29.5 (M/S)

**CLASSIFICATION: AMSTERDAM, ROTTERDAM, HAARLEM,
FLEVOLAND & FRIESLAND - 27.0 (M/S)**

CLASSIFICATION: REST OF THE COUNTRY - 24.5 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



NEW CALEDONIA

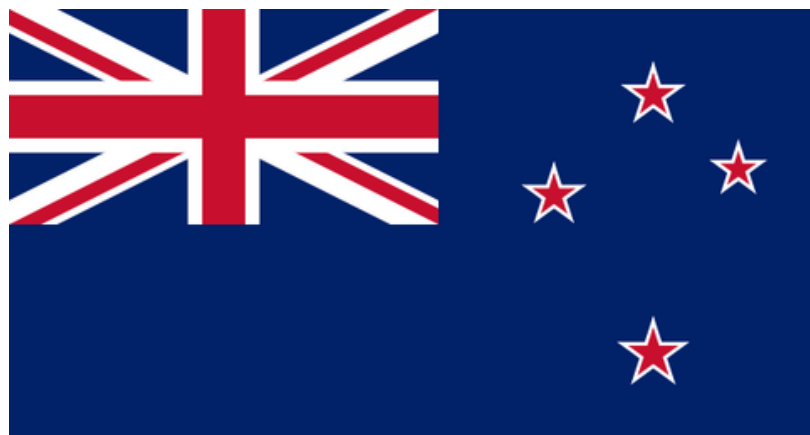
New Caledonia in the South Pacific Ocean is affected by tropical cyclones, such as 'Beti' in 1996, and 'Erica' in 2003, both of which produced significant damage. A national technical standard for construction was set at 36 m/s under order No. 2020-1287/GNC in August 2020.

CLASSIFICATION: 36 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



NEW ZEALAND

The main extreme winds affecting most of New Zealand are temperate synoptic systems, north of the country can experience the effects of decaying tropical cyclones. Technical standards for construction have been published in AS/NZS 1170.2:2021 – Structural Design Actions – Wind Action.

CLASSIFICATION: LOW WIND ZONE 32.00 (M/S)

CLASSIFICATION: MEDIUM WIND ZONE- 37.00 (M/S)

CLASSIFICATION: HIGH WIND ZONE- 44.00 (M/S)

CLASSIFICATION: VERY HIGH WIND ZONE- 50 (M/S)

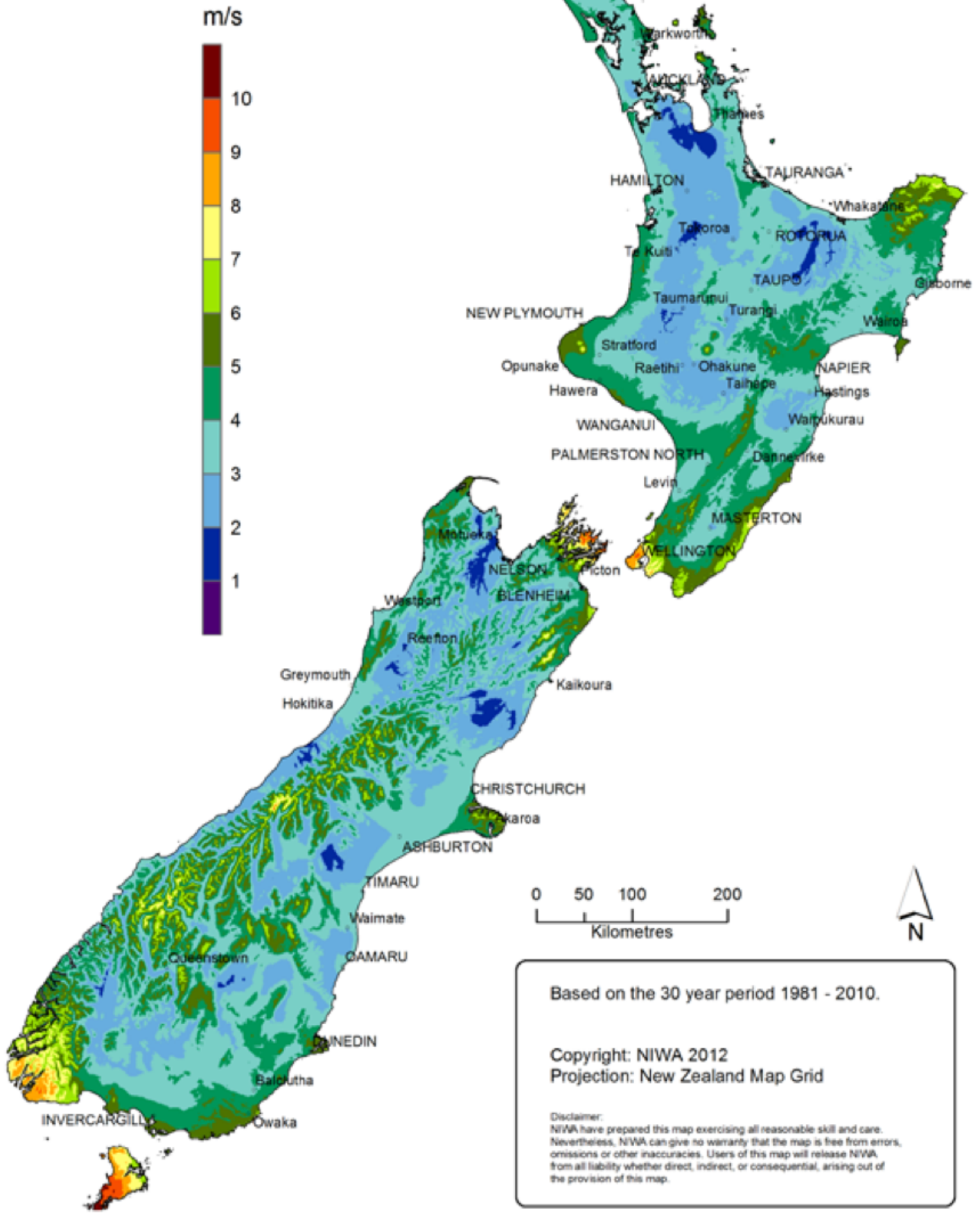
CLASSIFICATION: EXTREME WIND ZONE- 55 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>

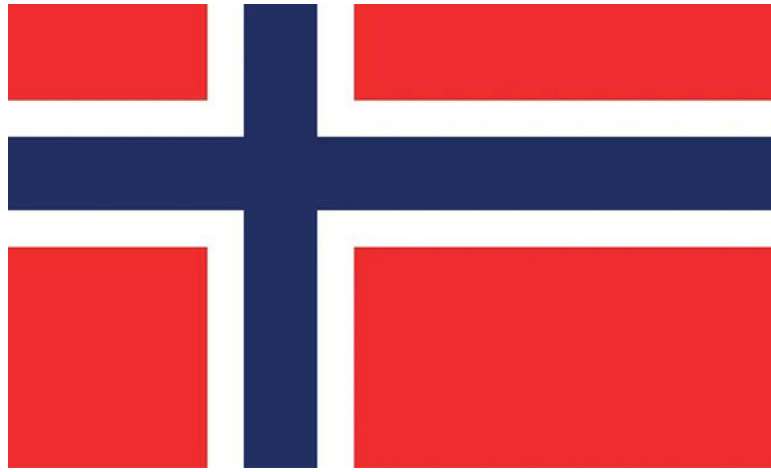
New Zealand Median Annual Average Wind Speed



Based on the 30 year period 1981 - 2010.

Copyright: NIWA 2012
Projection: New Zealand Map Grid

Disclaimer:
NIWA have prepared this map exercising all reasonable skill and care. Nevertheless, NIWA can give no warranty that the map is free from errors, omissions or other inaccuracies. Users of this map will release NIWA from all liability whether direct, indirect, or consequential, arising out of the provision of this map.



The basic wind velocities (10-minute mean, 50-year annual recurrence interval) in the Norwegian National Annex to the Eurocode, EN-1991-1-4, vary between 22 and 31 m/s.

CLASSIFICATION: 22-35 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



PAPUA NEW GUINEA

The majority of Papua-New Guinea (including Port Moresby) is in the Equatorial zone. An extreme value (Gumbel) analysis for Port Moresby using only 11 years of data gives a 50-year return period gust of 31 m/s.

CLASSIFICATION: SOUTHWEST TIP 40.00 (M/S)

CLASSIFICATION: PORT MORESBY - 28.00 (M/S)

CLASSIFICATION: LAE- 23.00 (M/S)

CLASSIFICATION: RABAUL- 26.00 (M/S)

CLASSIFICATION: HONIARA (SOLOMONS)- 34.00 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The Polish wind-loading standard PN-77/B-02011 gives 'characteristic' wind speeds of 20, 24, 27 and 30 m/s for four zones. In the largest zone, 20 m/s is specified. The higher altitude areas have a higher wind speed. These values are 10-min mean speeds, with a return period of 50 years.

CLASSIFICATION: 20-30 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>

 **ROMANIA**

The Romanian Standard STAS 10101/20-78 on Actions on Structures specified five zones for design wind pressures. These pressures correspond to peak gust wind speeds (10-year return period) ranging from 27 to 37 m/s. Technical standards for construction have been published as SR EN 1991-1-4/NB: 2007 and specify a design wind speed of 27 m/s.

CLASSIFICATION: 27 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



RUSSIA

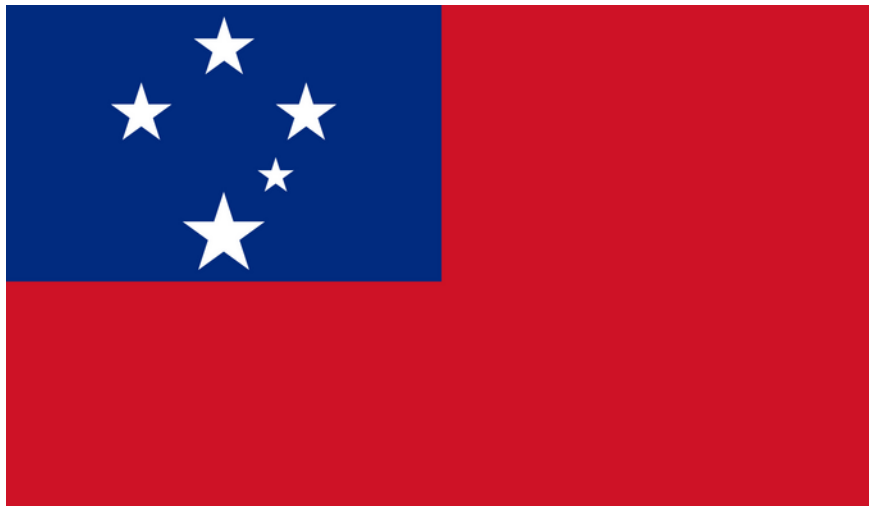
Russia has a vast land area, with a range of extreme wind climates. The Russian loading code SniP 2.01.07.85 specified eight zones for design wind pressures. In addition, guidance for steel design is found in “General Rules for Steel Structure Design” SP 53-102-2004. The specified values are 5-year return period pressures with a 10-min averaging time, and range from 240 Pa for the central part of the country to 1200 Pa on the coastal part of the Far East, and the islands of the Barents Sea. The recordable maximal value of the wind speed averaged over 10 minutes in Moscow city has been found as nearly 31 m/s.

CLASSIFICATION: 22-40 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



Samoa in the South Pacific (latitude 13–14°S) is affected by tropical cyclones (Holmes and Weller, 2002). Cyclones 'Ofa' (1990) and 'Val' (1991) did a significant damage. The U.S. Department of Defense recommended a 50-year gust wind speed of 67 m/s for the capital, Apia for houses. ASCE 7-16 specifies a 3-second gust of 300-year MRI of 67 m/s for American Samoa.

CLASSIFICATION: 67 (M/S)

(10-min-mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



The U.K. has a close network of meteorological stations, and high-quality data. The main strong wind source is severe gales moving in from the Atlantic on the west. Design winds are generally stronger on the west, reducing further east. The design wind speed data is known as the British Standard BS6399:2. BS6399:2 contained a map of 1-h mean wind speeds (50-year return period) ranging from 20 to 30 m/s.

CLASSIFICATION: 22-30 (M/S)

(1 hour mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



SOLOMON ISLANDS

The Solomon Islands in the South Pacific Ocean are occasionally exposed to developing tropical cyclones, which then move to the south. The Papua -New Guinea loading code specifies a 50-year gust speed of 34 m/s for the capital Honiara.

CLASSIFICATION: 22-30 (M/S)

(1 hour mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



SOUTH AFRICA

South Africa is subjected to severe thunderstorms on the inland high plains, and synoptic winds in the south, with the sources of the latter being subdivided into troughs, ridges and cold fronts. The technical standards are set but the 1989 Code of Practice for Loading of the South African Bureau of Standards (SABS 0160-1989) shows.

CLASSIFICATION : NORTHERN CAPE PROVINCE 30-35 (M/S)

CLASSIFICATION : NORTHERN PART OF WESTERN CAPE PROVINCE 35-40 (M/S)

CLASSIFICATION : REST OF THE COUNTRY 22-30 (M/S)

(3-sec bursts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



SPAIN

No data were given in the draft Eurocode (C.E.N., 1994), but the map in the E.C.C.S. Recommendations for the Calculation of Wind Effects on Structural Steelwork (E.C.C.S, 1978) gives values of 10-min mean wind speeds (50-year return period) of 22–26 m/s for Spain. There are some downslope wind areas in the Pyrenees. The basic wind velocities (10-minute mean, 50-year annual recurrence interval) in the Spanish National Annex to the Eurocode, EN-1991-1-4, range from 26 to 29 m/s

CLASSIFICATION: 22-30 (M/S)

(3-sec bursts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



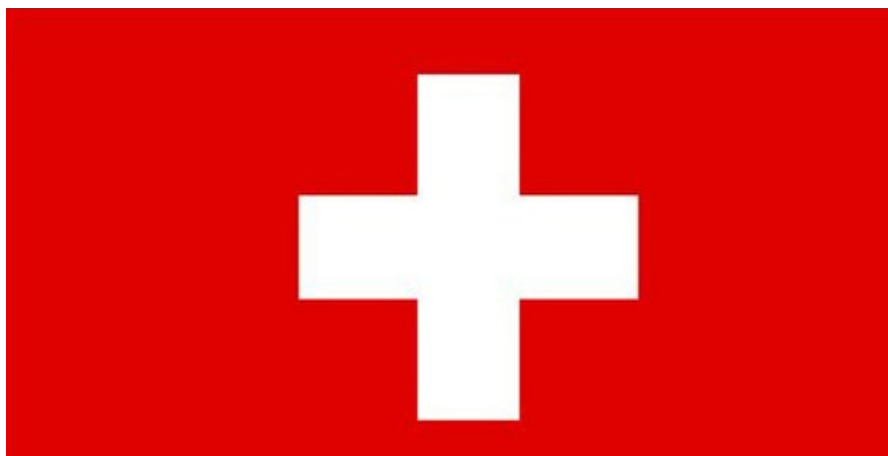
The draft Eurocode (C.E.N., 1994) gave a contour map with values of 10-min mean wind speed with a 50-year return period, between 22 m/s (northeast) and 26 m/s south and west. For Stockholm, the value is 24 m/s.

CLASSIFICATION: 22-30 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



SWITZERLAND

The draft Eurocode (C.E.N., 1994) specified values of 10-min mean wind speed with a 50-year return period, of 27.2 m/s over the vast majority of the country, including Zurich, Basel, Bern and Lausanne. There are a number of mountain areas where downslope wind occurs, and for which higher values of 30 and 33.3 m/s are specified

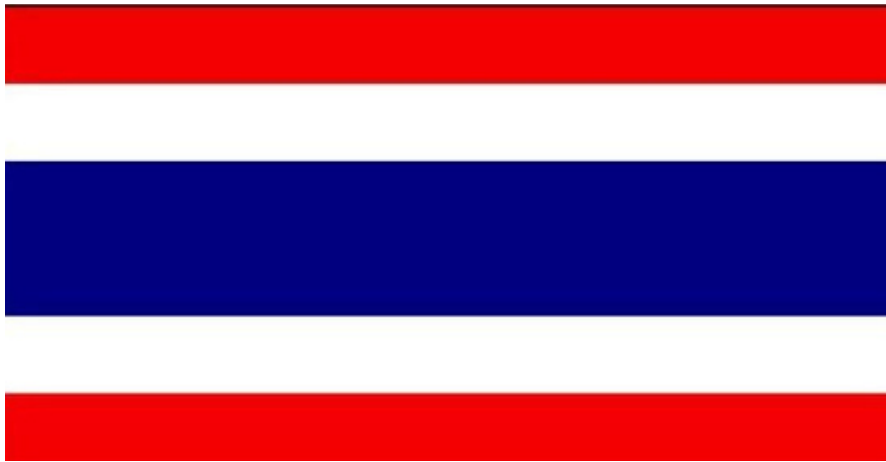
CLASSIFICATION : MOUNTAIN AREAS 22-30 (M/S)

CLASSIFICATION : REST OF THE COUNTRY 30-35 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



THAILAND

The draft Eurocode (C.E.N., 1994) specified values of 10-min mean wind speed with a 50-year return period, of 27.2 m/s over the vast majority of the country, including Zurich, Basel, Bern and Lausanne. There are a number of mountain areas where downslope wind occurs, and for which higher values of 30 and 33.3 m/s are specified

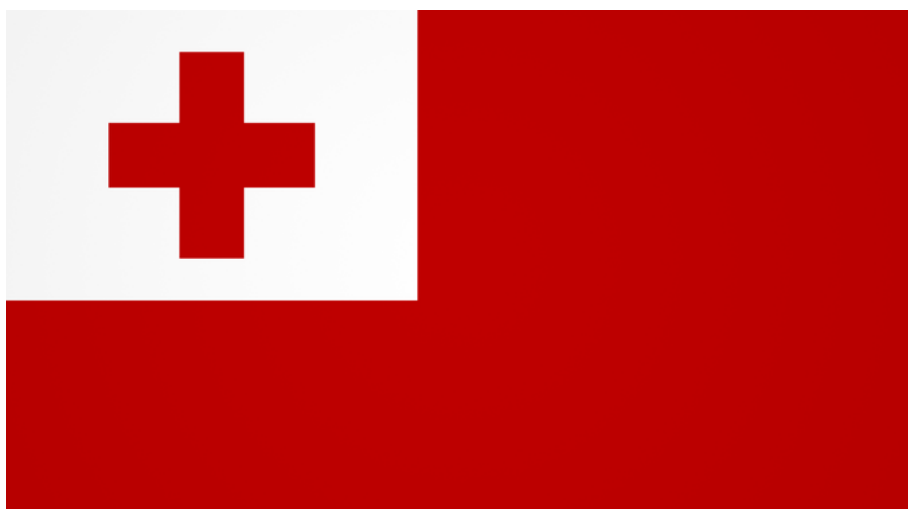
CLASSIFICATION : MOUNTAIN AREAS 30-35 (M/S)

CLASSIFICATION : REST OF THE COUNTRY 22-35 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



TONGA

Tonga, an island group in the South Pacific, suffers regular visits by tropical cyclones, including 'Isaac' (1982), 'Hina' (1997), 'Cora' (1998) and 'Waka' (2001), all of which did a significant damage. 'Gita', the strongest on record for Tonga with estimated maximum gusts of 77 m/s, destroyed or damaged more than 1,000 houses and the parliament building. The Tonga national building code specifies a design wind speed of 70 m/s for houses.

CLASSIFICATION : 70 (M/S)

(10-min mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



TURKEY

The extreme wind climate of coastal Turkey can be assumed to be similar to that of Greece. The U.S. Department of Defense recommends a 50-year return period gust of 44 m/s for Ankara.

CLASSIFICATION: 22-30 (M/S)

(3-sec gusts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



UKRAINE

Wind velocities for the Ukraine had an average time of 2 minutes, with a 10-year recurrence interval. Values range between 20 and 45 m/s. The higher values are primarily in mountainous regions or adjacent to the Black or Azov Seas. The basic wind velocities (10-minute mean, 50-year annual recurrence interval) in the Ukrainian National Annex to the Eurocode, EN-1991-1-4, range between 24 and 31 m/s

CLASSIFICATION: 22-40 (M/S)

(3-sec gusts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



UNITED STATES OF AMERICA

The design wind data for the United States is published as the ASCE Loading Standard (ASCE, 2006). The ASCE lists two main zones, with 50-year return period gust speeds of 40, and 38 m/s. The lower value applies to the west-coast states. The Atlantic Ocean and Gulf of Mexico coastlines have isotachs ranging from 67 to 45 m/s. Alaska has contours from 40 to 58 m/s. Hawaii has a basic wind speed of 47 m/s.

CLASSIFICATION : NON-HURRICANE MAINLAND 35-45 (M/S)

CLASSIFICATION : ATLANTIC AND TEXAS COASTS, MOST OF ALASKA & HAWAII 45-55 (M/S)

CLASSIFICATION : SOUTHERN FLORIDA, LOUISIANA, ALASKA COASTS & ELEVATED PARTS OF HAWAII 55-40 (M/S)

(3-sec gusts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



VANUATU

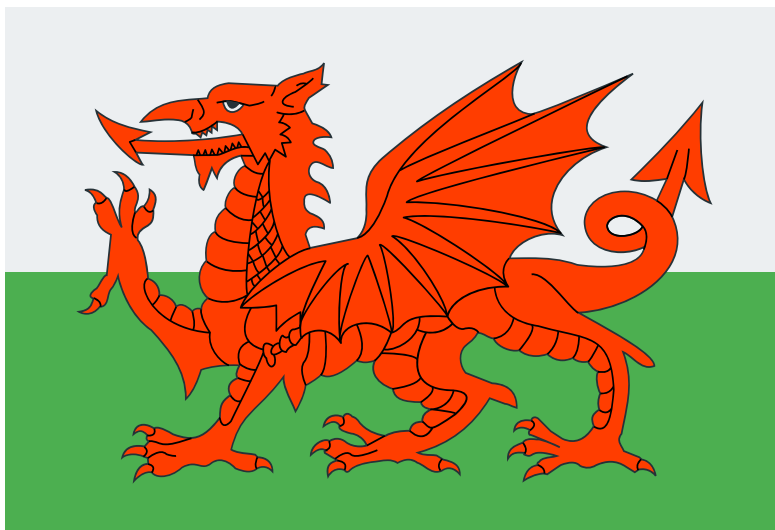
Vanuatu is an island group in the South Pacific, often affected by tropical cyclones, including 'Uma' (1987), 'Dani' (1999) and 'Ivy' (2004), which did a significant damage.

CLASSIFICATION: 70.00 (M/S)

(3-sec gusts)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>



WALES

The U.K. has a close network of meteorological stations, and high-quality data. The main strong wind source is severe gales moving in from the Atlantic on the west. Design winds are generally stronger on the west, reducing further east. The design wind speed data is known as the British Standard BS6399:2. BS6399:2 contained a map of 1-h mean wind speeds (50-year return period) ranging from 20 to 30 m/s.

CLASSIFICATION: 22-30 (M/S)

(1 hour mean)

Source:

- Holmes, John D., 1942-. (2001). Wind loading of structures / John D. Holmes. London ; New York : Spon Press
<http://www.loc.gov/catdir/toc/fy0610/00068754.html>