

WEATHER AND CLIMATE KOPPEN CLIMATE CLASSIFICATION FLOW CHART

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"A" CLIMATES - TROPICAL / HOT

Af: TROPICAL RAINFOREST

- ALL AVERAGE MONTHLY TEMPS GREATER THAN 18C/64.4F
- DRIEST MONTH WITH AT LEAST 6CM/2.40" OF PRECIPITATION
- LOCATIONS:
 - AMAZON RIVER BASIN (SOUTH AMERICA)
 - CONGO RIVER BASIN (AFRICA)
 - EASTERN COAST OF CENTRAL AMERICA
 - EASTERN COAST OF BRAZIL PHILIPPINES
 - EASTERN COAST OF MADAGASCAR EASTERN INDIA
 - SOUTHERN BANGLADESH MALAYSIA
 - INDONESIA
- CONTROLLING FACTORS:
 - HIGH YEAR AROUND INSOLATION/PRECIPITATION RESULT OF ITCZ/DOLDRUMS
 - RISING AIR ALONG TRADE WIND COASTS
- DISTINGUISHING CHARACTERISTICS:
 - CONSTANT HIGH TEMPERATURES
 - EQUAL LENGTH DAY AND NIGHT
 - LOWEST ANNUAL AVERAGE TEMP RANGES (2-3C/3-5F)
 - OCEAN ISLAND/CENTRAL PACIFIC HAS 0 DEGREE ANNUAL TEMPERATURE RANGE!
 - EVENLY DISTRIBUTED HVY ANNL PCPN (AVG 250CM/100"; EXTREME UP TO 500CM/250")
 - HIGH AMOUNT OF CLOUD COVER AND HUMIDITY YEAR AROUND

Aw: TROPICAL WET-DRY (LOW SUN DRY) - SAVANNA

- ALL AVERAGE MONTHLY TEMPS GREATER THAN 18C/64.4F
- MORE THAN 2 MONTHS HAVE LESS THAN 6CM/2.40" PRECIPITATION
DISTINCT DRY SEASON DURING LOW SUN SEASON (WINTER);
DISTINCT WET SEASON
HIGH SUN SEASON (SUMMER)
- LOCATIONS:
 - GENERALLY POLEWARD OF Af CLIMATE AREAS
 - NORTHERN AND EASTERN INDIA
 - INTERIOR MYANMAR (BURMA)
 - INDO-CHINESE PENINSULA
 - NORTHERN AUSTRALIA
 - BORDERLANDS OF CONGO RIVER BASIN (AFRICA)
 - SOUTH CENTRAL AFRICA
 - WESTERN CENTRAL AMERICA
 - LLANOS OF VENEZUELA & CAMPOS OF BRAZIL (SAVANNA)
 - EXTREME SOUTHERN FLORIDA
 - CARIBBEAN ISLANDS
- CONTROLLING FACTORS:
 - ALTERNATION BETWEEN HIGH SUN ITCZ/DOLDRUMS AND LOW
SUN SUBTROPICAL
BELTS
 - HIGHS AND TRADES CAUSED BY SHIFTING WINDS AND PRESSURE
- DISTINGUISHING CHARACTERISTICS:
 - DISTINCT HIGH-SUN WET AND LOW-SUN DRY SEASONS
 - RAINFALL AVGS 75-130CM/30-70" (RANGES FROM 180CM/70"
RAINFOREST MARGINS..
 - 100CM/39" DRIER MARGINS
 - HIGHEST TEMPERATURE RANGES OF "A" CLIMATE FAMILY

As: TROPICAL WET-DRY (HIGH SUN DRY) - SAVANNA

- ALL AVERAGE MONTHLY TEMPS GREATER THAN 18C/64.4F
- MORE THAN 2 MONTHS HAVE LESS THAN 6CM/2.40" PRECIPITATION
DISTINCT DRY SEASON DURING HIGH SUN SEASON (SUMMER) -
VERY RARE CLIMATE
- LOCATIONS:
 - EXTREME EASTERN TIP OF SOUTH AMERICA (BRAZIL)
- CONTROLLING FACTORS:
 - OCEANIC INFLUENCE RESULTS IN THIS RARE CLIMATE TYPE
- DISTINGUISHING CHARACTERISTICS:
 - DISTINCT HIGH SUN DRY AND LOW SUN WET SEASONS
 - RAINFALL AVGS 75-130CM/30-70" (RANGES FROM 180CM/70"
RAINFOREST MARGINS..
 - 100CM/39" DRIER MARGINS
 - HIGHEST TEMPERATURE RANGES OF "A" CLIMATE FAMILY

Am: TROPICAL MONSOON

- ALL AVERAGE MONTHLY TEMPS GREATER THAN 18C/64.4F
- ONE OR MORE MONTHS LESS THAN 6CM/2.40" PRECIPITATION
- EXCESSIVELY WET DURING RAINY SEASON (VERY PRONOUNCED WET SEASON)

-LOCATIONS:

COASTAL AREAS OF SOUTHWESTERN INDIA
SRI LANKA
BANGLADESH
MYANMAR (BURMA)
SOUTHWESTERN AFRICA
GUYANA
SURINAM
FRENCH GUIANA
PARTS OF NORTHEAST AND SOUTHEAST BRAZIL

-CONTROLLING FACTORS:

SUMMER ONSHORE, WINTER OFFSHORE AIR MOVEMENT
RELATED TO SHIFTING ITCZ
AND CHANGING PRESSURE CONDITIONS OVER LARGE
LANDMASSES

TRANSITIONAL BETWEEN Af AND Aw TO SOME DEGREE

-DISTINGUISHING CHARACTERICS:

OUTSIDE OF HAWAII, HEAVIEST RAINFALL RECORDS IN WORLD
EXIST IN THIS CLIMATE
CHERRIPUNJI, INDIA - 476" RAIN IN YEAR (40 FEET OF
RAIN!!)

HEAVY HIGH-SUN RAINFALL (ESPECIALLY W/OROGRAPHIC LIFT)
VERY SHORT LOW SUN (WINTER) DROUGHT
ANNUAL TEMPERATURE RANGE OF 2-6C/3-10F
HIGHEST TEMPERATURE ANNUALLY JUST PRIOR TO RAINY

SEASON

PRECIPITATION WIDELY RANGES FROM BETWEEN 150-400CM/60-
150" ANNUALLY

"B" CLIMATES - ARID/SEMIARID

BWh: DRY/ARID (HOT) - LOW LATITUDE DESERTS

- EVAPORATION EXCEEDS PRECIPITATION ON AVERAGE
 - PRECIPITATION IS LESS THAN HALF OF POTENTIAL EVAPORATION
- USUALLY LOWER LATITUDE, HOT DESERT CLIMATE
- MEAN AVERAGE TEMP IS OVER 18C/64.4F; FROST ABSENT OR INFREQUENT WINTER
- LOCATIONS:
 - NORTHERN MEXICO/SOUTHWESTERN USA/BAJA CALIFORNIA
 - NORTHERN AFRICA/SAUDI ARABIA/IRAN/WESTERN INDIA
 - CENTRAL/WESTERN AUSTRALIA
 - SOUTHERN AND WESTERN AFRICA
- DESERTS:
 - SAHARA DESERT
 - SONORIAN DESERT
 - ARABIAN DESERT
 - THAR DESERT (WESTERN INDIA & PAKISTAN)
 - AUSTRALIAN DESERT
 - KALAHARI DESERT

BWk: DRY/ARID (COOL) - MIDDLE LATITUDE DESERTS

- EVAPORATION EXCEEDS PRECIPITATION ON AVERAGE
PRECIPITATION IS LESS THAN HALF OF POTENTIAL EVAPORATION
- USUALLY MID-LATITUDE, COOLER DESERT CLIMATE
- MEAN AVERAGE TEMP IS BELOW 18C/64.4F; BELOW FREEZING TEMPS

WINTER

-LOCATIONS:

CASPIAN SEA EASTWARD TO NORTHERN CHINA & MONGOLIA
PORTIONS OF SOUTHERN SOUTH AMERICA

-DESERTS:

RUSSIAN TURKESTAN DESERT
TAKLA MAKAN DESERT
GOBI DESERT
MOHAVE DESERT

APPLIES TO BOTH BWk & BWb:

-CONTROLLING FACTORS:

DESCENDING, DIVERGING CIRCULATION OF SUBTROPICAL HIGHS
CONTINENTALITY OFTEN LINKED WITH RAIN SHADOW

LOCATIONS

-DISTINGUISHING CHARACTERISTICS:

ARIDITY, LOW RELATIVE HUMIDITY
IRREGULAR AND UNRELIABLE RAINFALL LESS THAN

25CM/10" ..OFTEN MUCH LESS

GREATEST PERCENTAGE OF SUNSHINE OF ALL CLIMATE TYPES
HIGHEST DIURNAL (DAY TO NIGHT) TEMPERATURE RANGES OF

ALL CLIMATES

HIGHEST DAILY MAXIMUM TEMPERATURES OF ALL CLIMATE

TYPES

WINDY & BREEZY CONDITIONS

BSh: SEMI-ARID, STEPPE (HOT)

-EVAPORATION EXCEEDS PRECIPITATION ON AVERAGE
PRECIPITATION IS MORE THAN HALF BUT LESS THAN POTENTIAL
EVAPORATION

-STEPPE/GRASSLAND/BUNCH GRASSES (WEST TEXAS NORTHWARD)

-MEAN AVERAGE TEMP IS OVER 18C/64.4F

-LOCATIONS:

APPROXIMATELY 13-15 DEGREES NORTH LATITUDE IN AFRICA -
SOUTHERN BORDER OF ARID CLIMATE

20 DEGREES SOUTH LATITUDE SOUTHERN AFRICA

BORDERLANDS AUSTRALIAN DESERT

PORTIONS OF SOUTHERN SOUTH AMERICA

PORTIONS OF INDIA

BORDERS BWh CLIMATES OF NORTHWESTERN AFRICA, SAUDI
ARABIA, WESTERN INDIA

Bsk: SEMI-ARID, STEPPE (COOL)

-EVAPORATION EXCEEDS PRECIPITATION ON AVERAGE
PRECIPITATION IS MORE THAN HALF BUT LESS THAN POTENTIAL
EVAPORATION

-USUALLY MID-LATITUDE, STEPPE/GRASSLAND/BUNCH GRASSES
(MONTANA SOUTH)

-MEAN AVERAGE TEMP IS BELOW 18C/64.4F

-LOCATIONS:

WESTERN GREAT PLAINS OF USA & SOUTH CENTRAL CANADA

BORDERS BWh AREAS CASPIAN SEA EASTWARD TO
CHINA/MONGOLIA

APPLIES TO BOTH BSh & BSk:

-CONTROLLING FACTORS:

SAME AS DESERTS..USUALLY TRANSITIONAL BETWEEN DESERTS
AND HUMID CLIMATES.

-DISTINGUISHING CHARACTERISTICS:

SEMIARID CONDITIONS, ANNUAL RAINFALL DISTRIBUTION
SIMILAR TO NEAREST HUMID

CLIMATE W/PRECIPITATION BETWEEN 25-50CM/10-20"

TEMPERATURES GREATLY VARY W/LATITUDE, ELEVATION &
CONTINENTALITY

"C" CLIMATES - SUBTROPICAL

Cwa: HUMID SUBTROPICAL - WARM WITH DISTINCTLY DRY WINTER

-AVERAGE TEMPERATURE OF WARMEST MONTH AVERAGES OVER 22C/72F

-AVERAGE TEMPERATURE OF COLDEST MONTH IS UNDER 18C/64.4F AND ABOVE -3C/26.6F

-WINTER DROUGHT; AT LEAST 10 TIMES AS MUCH PRECIPITATION DURING WETTEST SUMMER MONTH AS IN DRIEST WINTER MONTH.

Cfa: HUMID SUBTROPICAL - EAST COASTS

-AVERAGE TEMPERATURE OF WARMEST MONTH AVERAGES OVER 22C/72F

-AVERAGE TEMPERATURE OF COLDEST MONTH IS UNDER 18C/64.4F AND ABOVE -3C/26.6F

-YEAR AROUND RAINFALL DISTRIBUTION

APPLIES TO BOTH Cwa & Cfa:

-CONTROLLING FACTORS:

EAST COASTAL LOCATIONS BETWEEN 20 & 40 DEGREES NORTH & SOUTH LATITUDE

HUMID, ONSHORE AIR MOVEMENT IN SUMMER, CYCLONIC STORMS IN WINTER

-LOCATIONS:

SOUTHEASTERN UNITED STATES (FLORIDA NORTHWARD TO NORTH CAROLINA AND

WESTWARD THROUGH ALL OF OKLAHOMA, EXCEPT PANHANDLE, AS WELL AS

CENTRAL AND EAST TEXAS)

SOUTHEASTERN SOUTH AMERICA

COASTAL SOUTHEASTERN SOUTH AFRICA

EASTERN AUSTRALIA

EASTERN ASIA (FROM NORTHERN INDIA THROUGH SOUTHERN CHINA TO SOUTHERN JAPAN

WHICH IS Cwa - DRY/WET MONSOONAL)

-DISTINGUISHING CHARACTERISTICS:

HIGH HUMIDITY

SUMMER ARE MUCH LIKE HUMID TROPICS

FROST WITH POLAR AIR MASSES IN WINTER

PRECIPITATION HIGHLY VARIABLE; 65-250CM/25-100"

YEARLY..DECREASES INLAND

MONSOONAL INFLUENCE (Cwa) ONLY FOUND IN ASIA

Csa: HUMID SUBTROPICAL (MEDITERRANEAN)

- WARM WITH DISTINCTLY DRY HOT SUMMER W/STRONG CONTINENTAL INFLUENCE
- AVERAGE TEMP OF COLDEST MONTH IS UNDER 18C/64.4F AND ABOVE -3C/26.6F
- AT LEAST 3 TIMES AS MUCH PRECIPITATION DURING WETTEST WINTER MONTH AS IN DRIEST SUMMER MONTH (PRECIPITATION IN DRIEST SUMMER MONTH LESS THAN 4CM/1.56")
- WARMEST MONTH HAS AVERAGE TEMP OVER 22C/71.6F; AT LEAST 4 MONTHS HAVE AVERAGE TEMPS OVER 10C/50F

Csb: HUMID SUBTROPICAL (MEDITERRANEAN)

- COOL WITH DISTINCTLY DRY COOL SUMMER W/STRONG MARITIME INFLUENCE
- AVERAGE TEMP OF COLDEST MONTH IS UNDER 18C/64.4F AND ABOVE -3C/26.6F
- AT LEAST 3 TIMES AS MUCH PRECIPITATION DURING WETTEST WINTER MONTH AS IN DRIEST SUMMER MONTH (PRECIPITATION IN DRIEST SUMMER MONTH LESS THAN 4CM/1.56")
- NO MONTH WITH AVERAGE TEMP OVER 22C/71.6F; AT LEAST 4 MONTHS HAVE AVERAGE TEMPS OVER 10C/50F

APPLIES TO BOTH Csa & Csb:

-LOCATIONS:

- CENTRAL, COASTAL AREAS OF CALIFORNIA
- CENTRAL, COASTAL CHILE
- MEDITERRANEAN SEA BORDERLANDS
- IRANIAN HIGHLANDS
- CAPETOWN AREA OF SOUTH AFRICA
- SOUTHERN AND SOUTHWESTERN AREAS OF AUSTRALIA

-CONTROLLING FACTORS:

- WEST COAST LOCATIONS BETWEEN 30 AND 40 N & S

LATITUDES

ALTERNATION BETWEEN SUBTROPICAL HIGHS IN SUMMER AND WESTERLIES IN WINTER

-DISTINGUISHING CHARACTERISTICS:

- MILD, MOIST WINTERS & HOT, DRY SUMMERS (INLAND AREAS) AND FOGGY, COOLER COASTS
- HIGH PERCENTAGE OF SUNSHINE
- HIGH SUMMER DIURNAL RANGE (RANGE BETWEEN HIGH & LOW TEMPERATURES OF DAY)
- FROST DANGER IN WINTER SEASON

Cfb: MARINE WEST COAST - MILD

- AVERAGE TEMPERATURE OF ALL MONTHS IS BELOW 22C/71.6C
- AT LEAST 4 MONTHS WITH AN AVERAGE TEMPERATURE ABOVE 10C/50F
- AVERAGE TEMPERATURE OF COLDEST MONTH IS UNDER 18C/64.4F AND ABOVE -3C/26.6C
- RAINFALL EQUALLY SPREAD THROUGHOUT YEAR

Cfc: MARINE WEST COAST - COOL

- AVERAGE TEMPERATURE OF ALL MONTHS IS BELOW 22C/71.6C
- 1 TO 3 MONTHS WITH AN AVERAGE TEMPERATURE ABOVE 10C/50F
- AVERAGE TEMPERATURE OF COLDEST MONTH IS UNDER 18C/64.4F AND ABOVE -3C/26.6F
- RAINFALL EQUALLY SPREAD THROUGHOUT YEAR

APPLIES TO BOTH Cfb & Cfc:

- CONTROLLING FACTORS:
 - WEST COAST LOCATION (AROUND YEAR INFLUENCE OF THE WESTERLIES)
 - WARM OCEAN CURRENTS ALONG MOST OF THE COASTS
- LOCATIONS:
 - COASTAL OREGON, WASHINGTON, BRITISH COLUMB AND SOUTHERN ALASKA
 - NORTHWEST EUROPE
 - SOUTHERN CHILE
 - INTERIOR SOUTH AFRICA
 - SOUTHEAST AUSTRALIA AND NEW ZEALAND
- DISTINGUISHING CHARACTERISTICS:
 - MILD WINTERS AND MILD SUMMERS WITH LOW ANNUAL TEMPERATURE RANGE
 - HEAVY CLOUD COVER
 - HIGH HUMIDITY
 - FREQUENT CYCLONIC STORMS WITH PROLONGED RAIN, DRIZZLE OR FOG
 - 3 TO 4 MONTH FROST PERIOD DURING THE WINTER SEASON

"D" CLIMATES - TEMPERATE

Dfa: HUMID CONTINENTAL HOT SUMMERS W/YEAR AROUND PRECIPITATION

- AVERAGE TEMPERATURE OF COLDEST MONTH IS -3C/26.6F OR BELOW
- AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F
- RAINFALL EQUALLY SPREAD THROUGHOUT YEAR

Dwa: HUMID CONTINENTAL HOT SUMMERS W/DRY WINTERS

- AVERAGE TEMPERATURE OF COLDEST MONTH IS -3C/26.6F OR BELOW
- AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F
- WINTERS DRY; AT LEAST TEN TIMES AS MUCH PRECIPITATION DURING THE WETTEST SUMMER MONTH AS IN THE DRIEST WINTER MONTH

APPLIES TO BOTH Dfa & Dwa:

- CONTROLLING FACTORS:
 - LOCATION IN THE LOWER MIDDLE LATITUDES (35 TO 45 DEGREES)
 - CYCLONIC STORMS ALONG THE POLAR FRONT
 - PREVAILING WESTERLIES
 - CONTINENTALITY PREVAILS
 - POLAR ANTICYCLONE IN WINTER (RESULTS IN Dwa CLIMATE TYPE) - HIGH CONTINENTALITY
- LOCATIONS:
 - EASTERN AND MIDWESTERN UNITED STATES (ATLANTIC COAST TO THE 100TH MERIDIAN POLEWARD OF THE "C" CLIMATE TYPE)
 - EAST CENTRAL EUROPE
 - NORTHERN CHINA, MANCHURIA, NORTHERN KOREA, AND HONSHU
- DISTINGUISHING CHARACTERISTICS:
 - HOT, OFTEN HUMID SUMMERS; OCCASIONAL WINTER COLD WAVES
 - RATHER LARGE ANNUAL TEMPERATURE RANGES
 - GREAT WEATHER VARIABILITY ON ESPECIALLY YEARLY BASIS
 - PRECIPITATION 50-115CM/20-45" ANNUALLY DECREASING INLAND AND POLEWARD
 - AN APPROXIMATE 140-200 DAY GROWING SEASON

Dfb: HUMID CONTINENTAL MILD SUMMER WITH YEAR AROUND RAINFALL

- AVERAGE TEMPERATURE OF COLDEST MONTH IS -3C/26.6F OR BELOW

-AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F

-NO MONTH WITH AVERAGE TEMPERATURE OVER 22C/71.6F

-RAINFALL EQUALLY SPREAD THROUGHOUT YEAR

Dwb: HUMID CONTINENTAL MILD SUMMER WITH DRY WINTERS

-AVERAGE TEMPERATURE OF COLDEST MONTH IS -3C/26.6F OR BELOW

-AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F

-NO MONTH WITH AVERAGE TEMPERATURE OVER 22C/71.6F

-AT LEAST 10 TIMES AS MUCH PRECIPITATION IS THE WETTEST SUMMER MONTH AS IN DRIEST WINTER MONTH

APPLIES TO BOTH Dfb & Dwb:

-CONTROLLING FACTORS:

LOCATIONS IN THE MID-LATITUDES (45 TO 55 DEGREES)

CYCLONIC STORMS ALONG THE POLAR FRONT

PREVAILING WESTERLIES

CONTINENTALITY PREVAILS

POLAR ANTICYCLONE IN WINTER (RESULTS IN Dwb CLIMATE TYPE)

-LOCATIONS:

NEW ENGLAND, THE GREAT LAKES REGION, AND SOUTH CENTRAL CANADA

SOUTHEASTERN SCANDINAVIA

EASTERN EUROPE

WEST CENTRAL ASIA

EASTERN MANCHURIA & ASIA

HOKKAIDO

-DISTINGUISHING CHARACTERISTICS:

MODERATE SUMMERS

LONG WINTERS WITH FREQUENT SPELLS OF CLEAR, COLD WEATHER

LARGE ANNUAL TEMPERATURE RANGES

VARIABLE WEATHER W/ LESS TOTAL PRECIPITATION THAN AREAS SOUTH

AN APPROXIMATE 90-130 DAY GROWING SEASON

Dfc: SUBARCTIC WITH COOL SUMMERS AND YEAR AROUND RAINFALL

-AVERAGE TEMPERATURE OF COLDEST MONTH IS -3C/26.6F OR BELOW

-AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F

-1 TO 3 MONTHS WITH AVERAGE TEMPERATURES ABOVE 10C/50F

-RAINFALL EQUALLY SPREAD THROUGHOUT YEAR

Dfd: SUBARCTIC WITH COLD WINTERS AND YEAR AROUND RAINFALL

- COLDEST MONTH HAS AVERAGE TEMPERATURE OF -38C/-36.4F OR BELOW
- AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F
- RAINFALL EQUALLY SPREAD THROUGHOUT YEAR

Dwc: SUBARCTIC WITH COOL SUMMERS AND DRY WINTERS

- AVERAGE TEMPERATURE OF COLDEST MONTH OF -3C/26.6F OR BELOW
- AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F
- 1 TO 3 MONTHS WITH AVERAGE TEMPERATURES ABOVE 10C/50F
- AT LEAST 10 TIMES AS MUCH PRECIPITATION IN THE WETTEST SUMMER MONTH AS IN DRIEST WINTER MONTH

Dwd: SUBARCTIC WITH COLD WINTERS AND DRY WINTERS

- COLDEST MONTH HAS AVERAGE TEMPERATURE OF -38C/-36.4F OR BELOW
- AVERAGE TEMPERATURE OF WARMEST MONTH IS GREATER THAN 10C/50F
- AT LEAST 10 TIMES AS MUCH PRECIPITATION IN THE WETTEST SUMMER MONTH AS IN DRIEST WINTER MONTH

APPLIES TO Dfc, Dwc, Dfd & Dwd:

- CONTROLLING FACTORS:
 - LOCATION IN THE HIGHER MIDDLE LATITUDE (50 TO 70 DEGREES) WESTERLIES IN SUMMER
 - STRONG POLAR ANTICYCLONE IN WINTER (CREATES Dwc & Dwd CLIMATE TYPES)
 - OCCASIONAL CYCLONIC STORMS
 - EXTREME CONTINENTALITY
- LOCATIONS:
 - NORTHERN NORTH AMERICA (FROM NEWFOUNDLAND TO ALASKA)
 - NORTHERN EURASIA (FROM SCANDINAVIA THROUGH SIBERIA TO THE BERING SEA AND THE SEA OF OKHOTSK)
- DISTINGUISHING CHARACTERISTICS:
 - BRIEF, COOL SUMMERS AND LONG, BITTERLY COLD WINTERS
 - LARGEST ANNUAL TEMPERATURE RANGES
 - LOWEST TEMPERATURES OUTSIDE OF ANTARCTICA
 - LOW PRECIPITATION OF 25-50CM/10-20" ANNUALLY
 - UNRELIABLE 50-80 DAY GROWING SEASON
 - PERMAFROST COMMON

"E" CLIMATES - POLAR

ET: TUNDRA CLIMATE

- AVERAGE TEMP OF WARMEST MONTH IS BELOW 10C/50F BUT IS GREATER THAN 0C/32F
- PRECIPITATION EXCEEDS POTENTIAL EVAPORATION
- LOCATIONS:
 - ARCTIC OCEAN BORDERLANDS OF NORTH AMERICA, GREENLAND AND EURASIA
 - ANTARCTIC PENINSULA
 - SOME POLAR ISLANDS
- CONTROLLING FACTORS:
 - LOCATION IN HIGH LATITUDES
 - SUBSIDENCE AND DIVERGENCE OF THE POLAR ANTICYCLONE
 - PROXIMITY TO COASTS
- DISTINGUISHING CHARACTERISTICS:
 - SUMMERLESS, AT LEAST 9 MONTHS AVERAGE BELOW FREEZING
 - VERY LOW EVAPORATION
 - PRECIPITATION USUALLY BELOW 25.5CM/10"
 - COASTAL FOG
 - STRONG WINDS

EF: ICECAP CLIMATE

- AVERAGE TEMP OF WARMEST MONTH IS 0C/32F OR BELOW
- PRECIPITATION EXCEEDS POTENTIAL EVAPORATION
- LOCATIONS:
 - INTERIOR GREENLAND
 - MOST OF ANTARCTICA (EXCEPT ANTARCTIC PENINSULA)
 - PERMANENTLY FROZEN PORTIONS OF THE ARCTIC OCEAN AND ASSOCIATED ISLANDS
- CONTROLLING FACTORS:
 - LOCATIONS IN HIGH LATITUDES AND INTERIORS OF LANDMASSES
 - YEAR-AROUND INFLUENCE OF THE POLAR ANTICYCLONE
 - ICE COVER
 - ELEVATION OF ICE DOME
- DISTINGUISHING CHARACTERISTICS:
 - SUMMERLESS, ALL MONTHS AVERAGE BELOW FREEZING
 - WORLD'S COLDEST TEMPERATURES
 - EXTREMELY MEAGER PRECIPITATION IN FORM OF SNOW, EVAPORATION EVEN LESS

"H" CLIMATES - HIGHLAND AREAS

H: HIGHLAND CLIMATE

-DUE TO MOUNTAINOUS AREAS, CAN ENCOMPASS ANY OF THE ABOVE CLIMATE CLASSIFICATIONS

-VERY COMPLEX AND TIGHT KNIT CLIMATIC ZONE.

-TEMPERATURE DECREASE WITH INCREASING ALTITUDE = AVG
3.6F/1000FT

-ZONES OF CLIMATE IN HIGHLAND REGIONS BASED ON CHANGES IN TEMPERATURE WITH ELEVATION THAT

ROUGHLY COORESPOND TO KOPPENS CLIMATIC ZONES BASED ON THE CHANGE IN TEMPERATURE

WITH LATITUDE...WITH ONE IMPORTANT EXCEPTION...SEASONS ONLY EXIST IN HIGHLANDS IF THEY

ALSO EXIST IN THE NEARBY LOWLAND REGIONS. (EXAMPLE: ALTHOUGH ZONES OF INCREASINGLY

COOLER TEMPERATURES OCCUR AT PROGRESSIVELY HIGHER ELEVATIONS IN THE TROPICAL

REGIONS ("A" CLIMATES), THE SEASONAL CHANGES OF KOPPENS "C", "D" AND "E" CLIMATES

ARE NOT PRESENT.

-CONTROLLING FACTORS:

ELEVATION

EXPOSURE

From <http://www.utexas.edu/depts/grg/kimmel/GRG301K/grg301kkoppen.html>