

A scenic mountain landscape featuring a large, rugged mountain peak with significant snow cover. The foreground consists of a calm, clear lake that perfectly reflects the mountain and the sky. The surrounding slopes are rocky and covered with sparse, dry grass. The sky is a clear, vibrant blue with a few wispy clouds.

A very, very brief introduction to summer mountaineering skills

Dr Andrew French

Contents

- Kit
- Emergencies
- Ropework
- Mountain weather
- Route planning
- Where to go?
- Further information



Kit you are wearing

Sunglasses

Sunscreen

Base layer

Alcohol gel

Camera etc

Trekking trousers

Gaiters

Scarf / buff

Whistle

Watch, *altimeter*

Food

Map and compass

Mobile
phone and
emergency
contacts



Mountaineering boots

Head torch
First aid kit

Walking poles

Waterproof jacket
Waterproof trousers

Gloves
Hat
Emergency shelter

Everything in
waterproof bags!

Rope
1 litre bottle
of water

Sit mat
Midlayer /fleece

Mp3 player
cards
entertainment!
Boot laces
duct tape,
zip ties...

Spare underwear

Sleeping mat
Stove and fuel
Sleeping bag

Tent

Kit in your
rucksack



First Aid

Danger
Response

Alert
Voice
Pain
Unresponsive

SHOUT FOR HELP

Airway
Breathing
Circulation
Damage
Everything else

Signs and symptoms
Allergies
Medication
Past history
Last meal
Event

Prepare for Emergencies

Keep warm

Bring the right clothes
Group shelter

Energy and hydration

Regular rations!
Keep morale high
Don't carry too much

Check local weather the day before

MWIS
Met Office



Plan your route

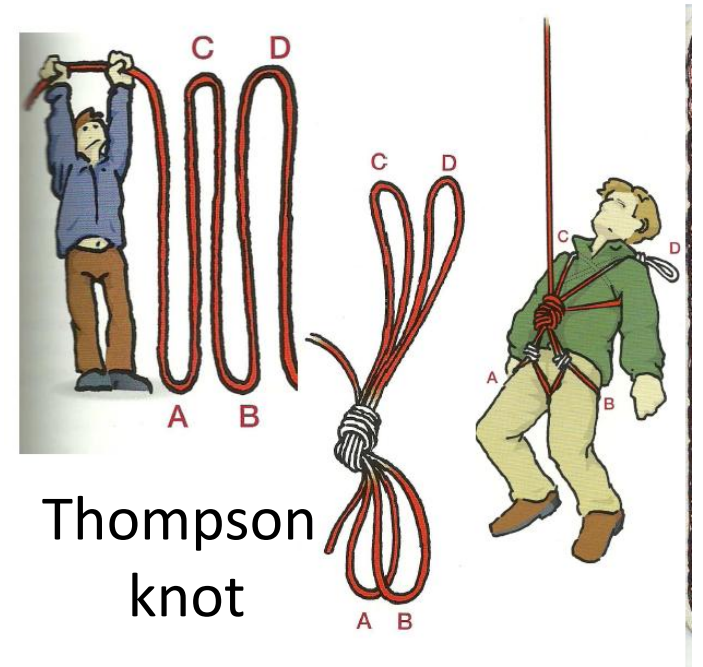
Tell others where you are going!
Make a laminated map
Escape routes
Bring navigation kit

First aid

Attend a course
Recovery position
Heart massage to 'Stayin alive'
Stop blood leaks via pressure and elevation
Emergency phone numbers

Ropework

- A *walking* rope and how to store it
- Overhand knot and loops
- Confidence roping
- Thumbs up Z!
- Simple belay using a fixed anchor
- South African descent
- Improvised harness demo



UK mountain weather

Dry air lapse rate = $-1^{\circ}\text{C} / 100\text{m}$

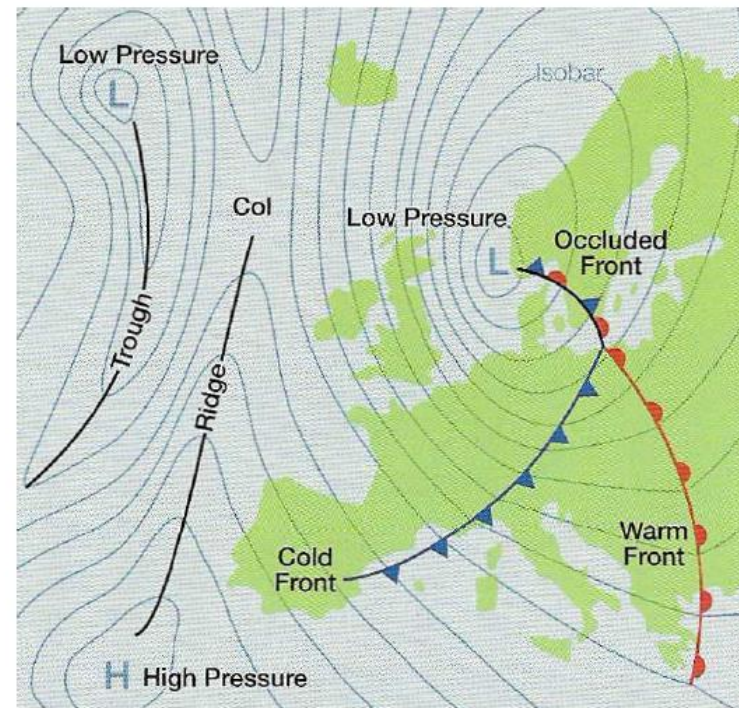
Wet air lapse rate = $-0.5^{\circ}\text{C} / 100\text{m}$

Wind at 1000m is 2 to 3 x wind speed at 0m

5mph (valley) for every isobar which crosses the UK

Synoptic charts

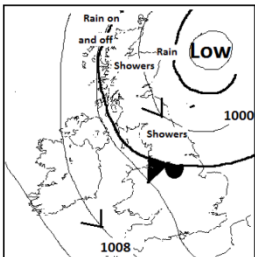
More fronts more weather!





Betws-y-Coed - The natural choice for generations visiting Snowdonia. Start your journey at <http://www.betws-y-coed.co.uk/>

General Summary for Tuesday, 19th July, 2011



British Mountain Summary:
Based on forecast chart for noon 19th July, 2011

North or northwesterly winds will bring generally showery conditions, although particularly across northern Scotland, there may be areas of more widespread rain associated with the remnants of fronts. Winds light, except over the eastern Highlands.

Headline for Snowdonia National Park

Showery; fairly light wind.

Detailed Forecast for Tuesday, 19th July, 2011

How windy? (On the summits)	Northwesterly, 20 to 25mph; gusts may reach 40mph on highest summits.
Effect of wind on you?	Fairly small generally, although significant buffeting for periods on highest summits.
How wet?	Showers Showers, at times frequent on coastal hills, particularly morning. Most showers well inland in afternoon. Very wet underfoot north and west after recent rain.
Cloud on the hills?	Lifting to cover only higher tops Cloud base typically 450-650m, although nearer 750m Bala area until mid or late morning, then gradually rising to 950m, although in and after rain, cloud will lower again.
Chance of cloud free summits?	20% rising to 70% by early afternoon
Sunshine and air clarity?	Only glimpses of sun. The air often very clear, but visibility restricted by rain and very poor where in cloud.
How Cold? (at 900m)	8 or 9C.
Freezing level	Above summits.

Looking Ahead

	Wednesday, 20th July, 2011	Thursday, 21st July, 2011
How windy? (On the summits)	Generally northerly, 10mph.	Northerly, 15mph.
Effect of wind on you?	Negligible	Negligible
How wet?	Showers Scattered showers, rarely heavy.	Risk of showers A few showers, generally only well inland by afternoon.
Cloud on the hills?	Often clearing Generally cloud above most summits by midday, although may persist above 950m, with few breaks above. Should widespread rain develop, then cloud may well drop widely to 500m.	Often clearing, particularly south Northern hills: extensive cloud base 700 rising to 900m, rarely 500m in morning. The cloud may intermittently clear higher summits in afternoon. Elsewhere: summits extensively cloud free by late morning.
Chance of cloud free summits?	70%	60%
Sunshine and air clarity?	Pockets of sun probable, most widely morning. The air very clear.	Patchy sunshine. The air very clear.
How Cold? (at 900m)	7C.	6 rising to 8C toward south.
Freezing level	Above summits.	Above summits.

Planning Outlook: All mountain areas of Britain from Wednesday, 20th July, 2011

Northerly winds most of this week will bring generally chilly, often cloudy conditions with showers, at times heavy. The air will be very clear indeed, and with cloud often above the summits, views will often be superb. Very likely dry with light winds most or all weekend.

ALL OUR WEATHER OCCURS IN THE TROPOSPHERE

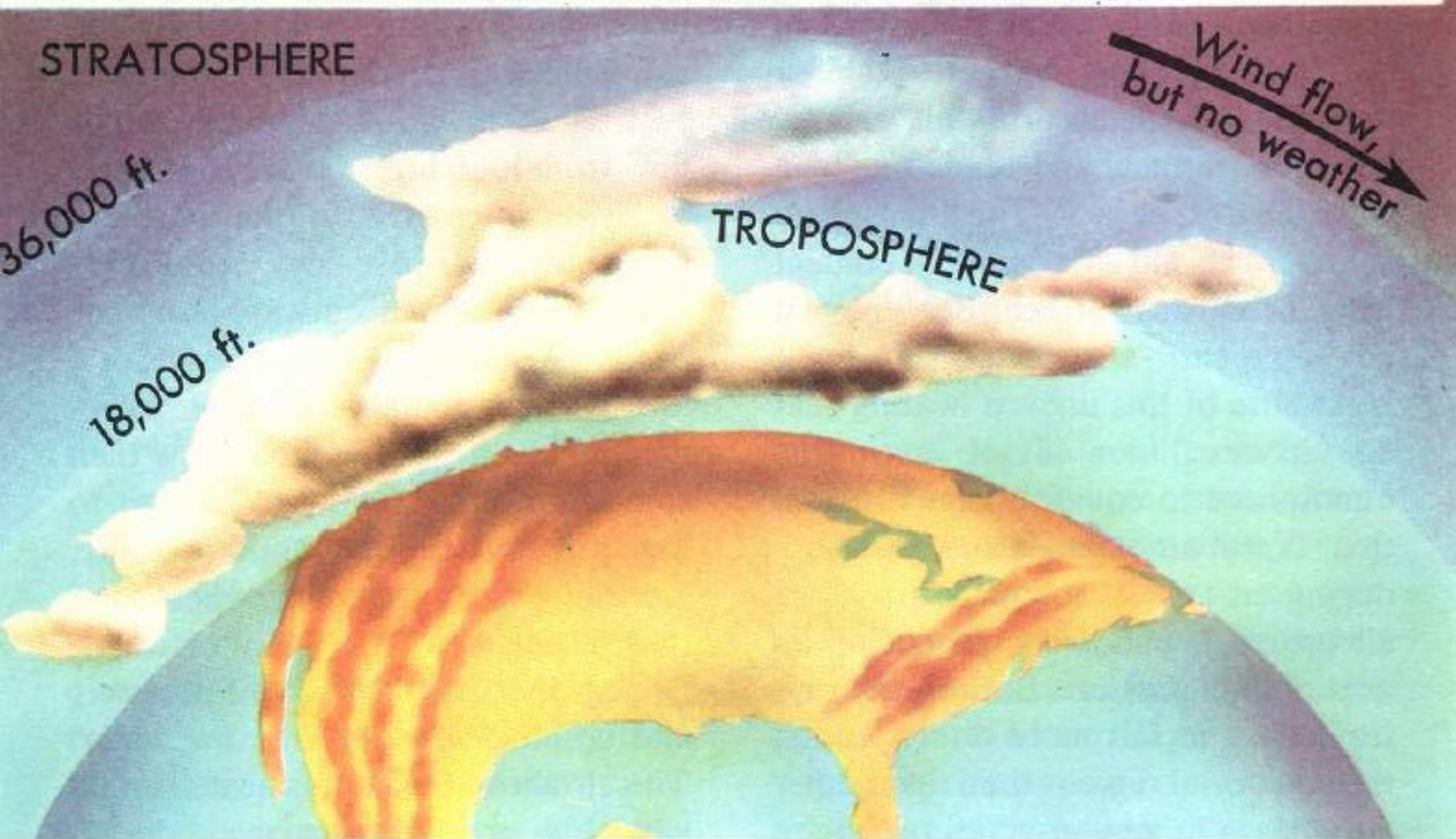
STRATOSPHERE

36,000 ft.

18,000 ft.

TROPOSPHERE

Wind flow,
but no weather



Cloud types



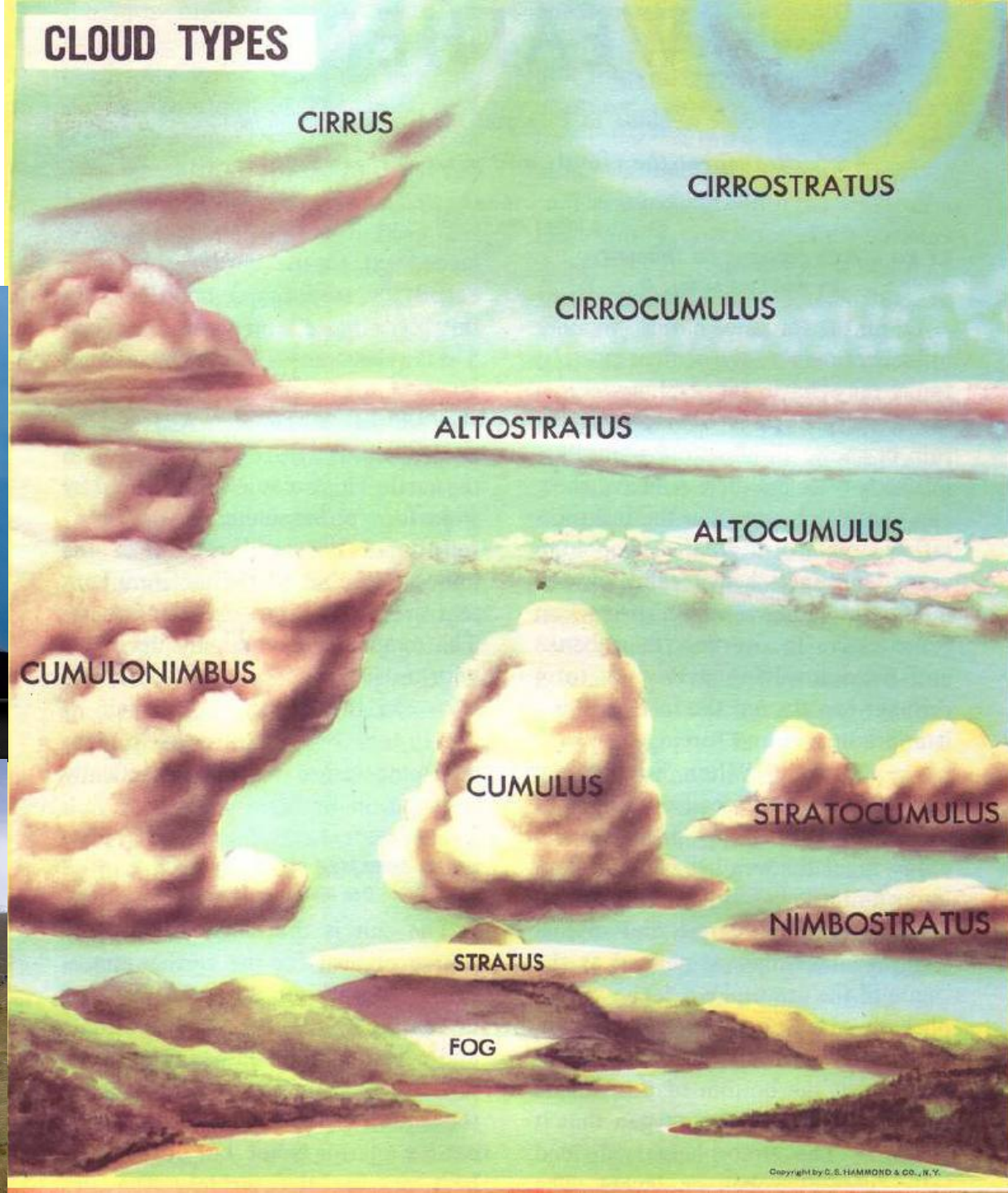
Mount Rainier, Washington, behind lenticular clouds
Photograph by Arco Images/Alamy



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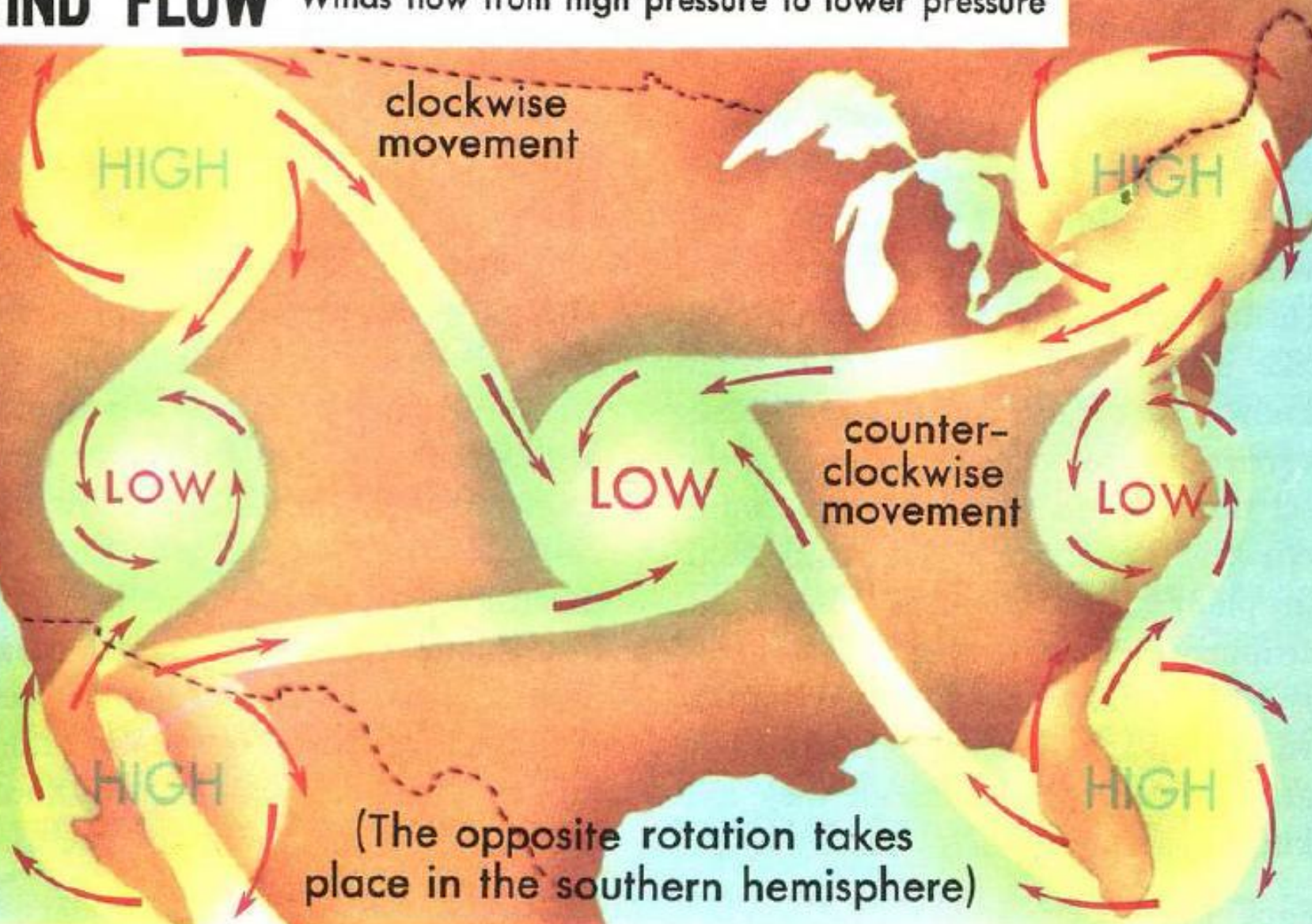
CLOUD TYPES



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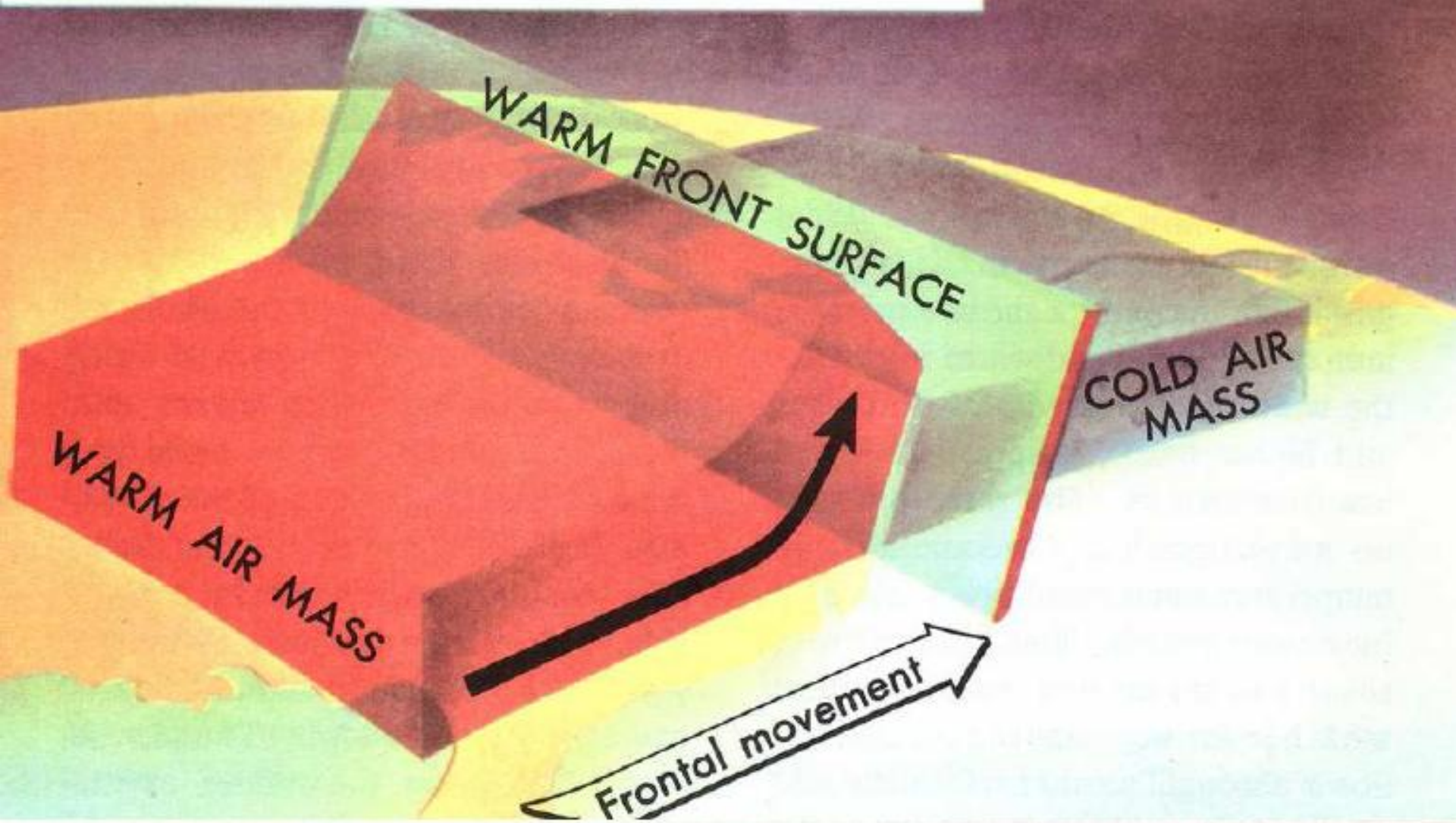
WIND FLOW

Winds flow from high pressure to lower pressure

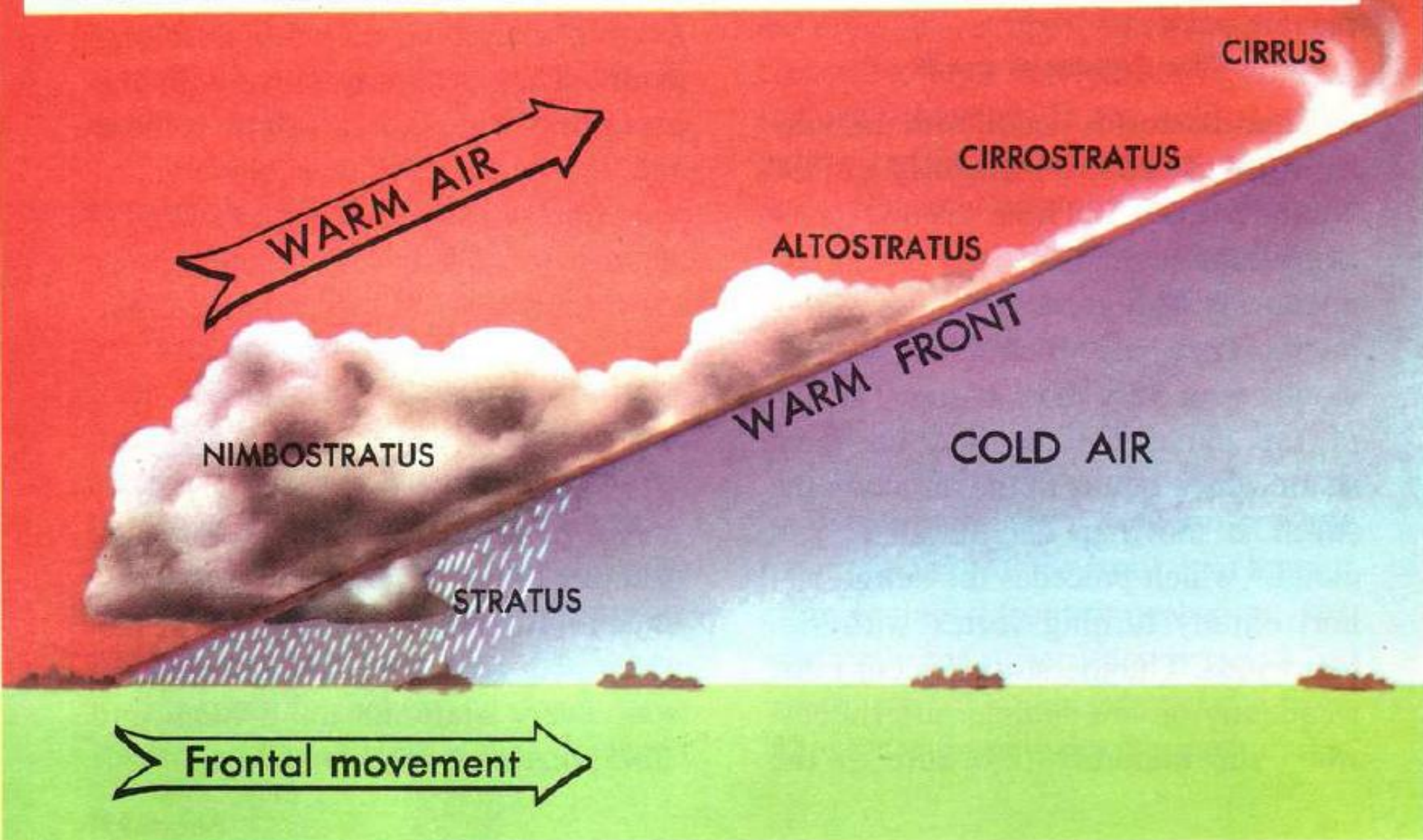


WARM FRONT

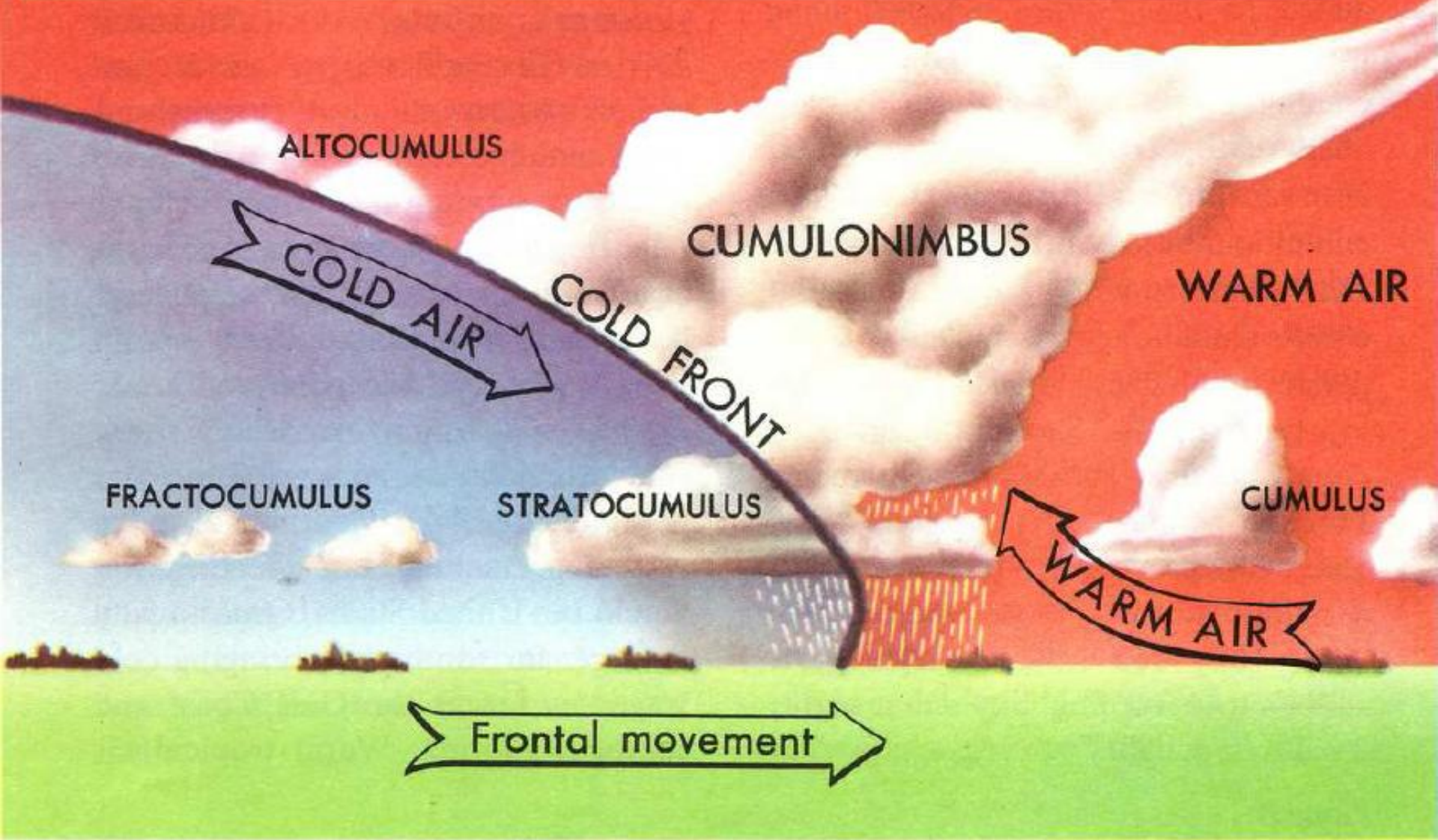
Warm air is pushing over cold air



CROSS SECTION OF CLOUDS ON A WARM FRONT

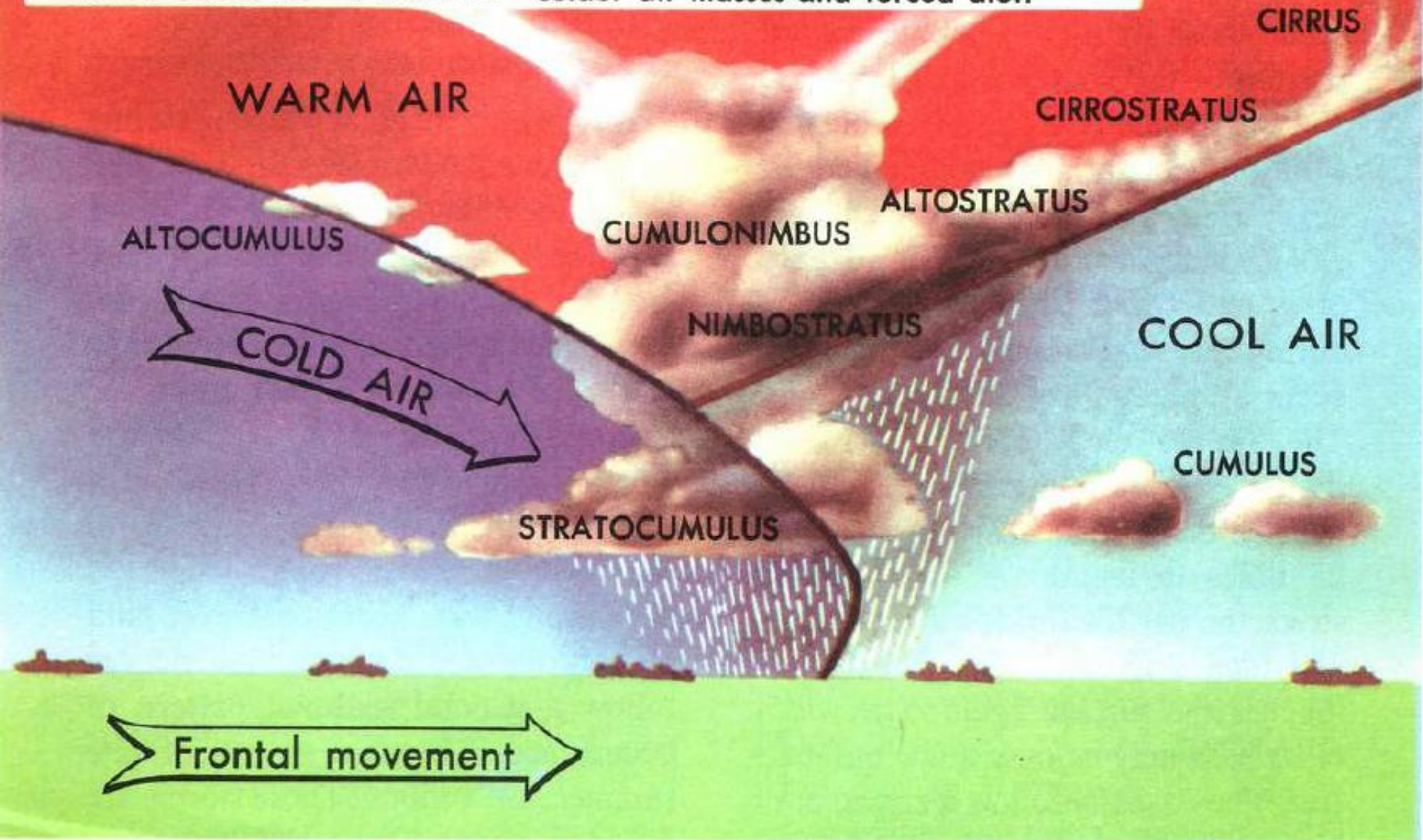


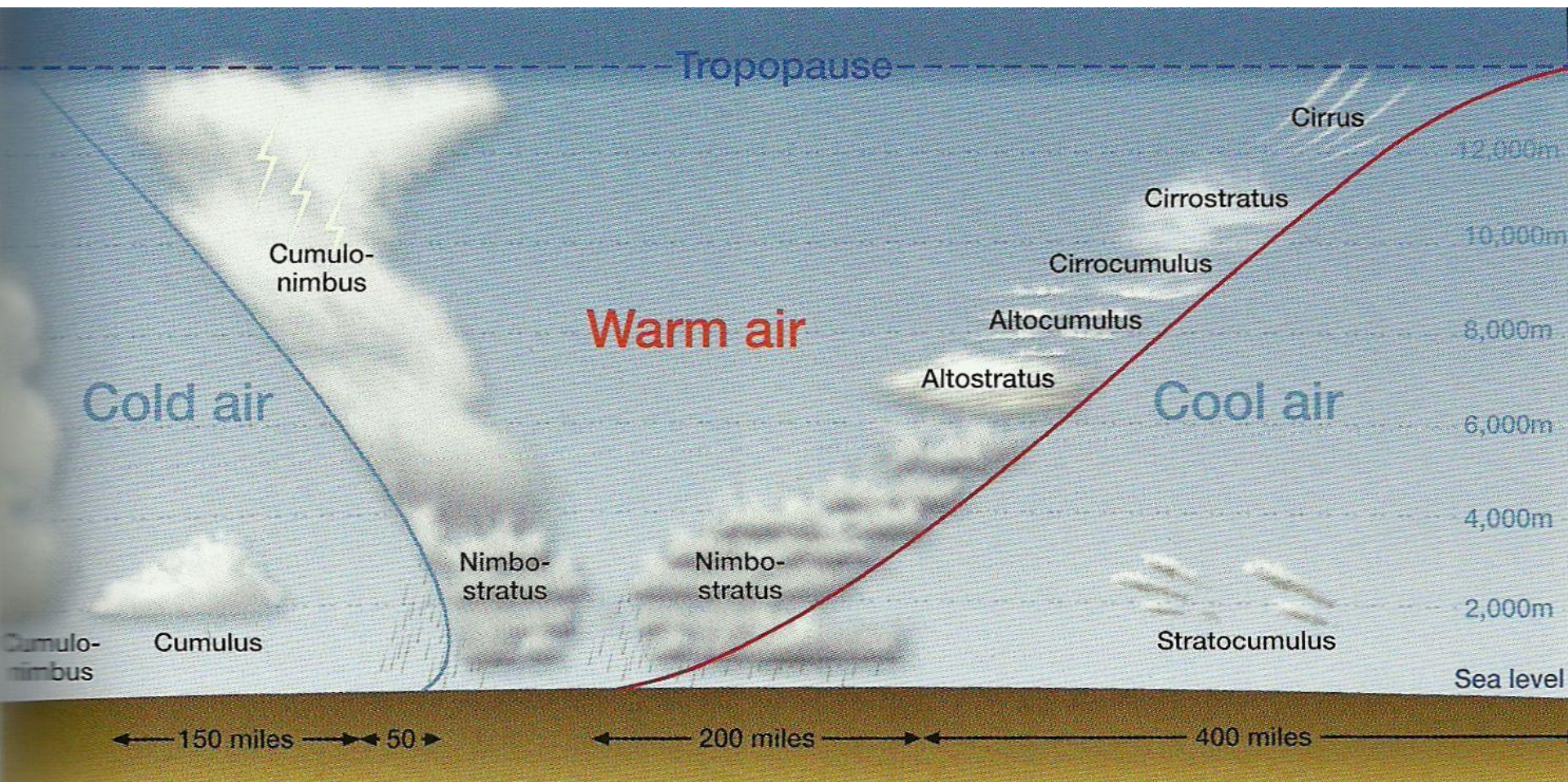
CROSS SECTION OF CLOUDS ON A COLD FRONT



OCCLUDED FRONT

Warm air mass is trapped between two colder air masses and forced aloft





HURRICANE OR TYPHOON

CIRRUS

CIRROSTRATUS

ALTOCUMULUS

CUMULONIMBUS

STRATOCUMULUS

NIMBOSTRATUS

WIND

TORRENTIAL RAIN

Diameter varies from 100 to 800 miles

EYE

CALM

Eye varies from 2 to 40 miles in diameter

CIRRUS

CIRROSTRATUS

ALTOCUMULUS

CUMULONIMBUS

STRATOCUMULUS

NIMBOSTRATUS

WIND

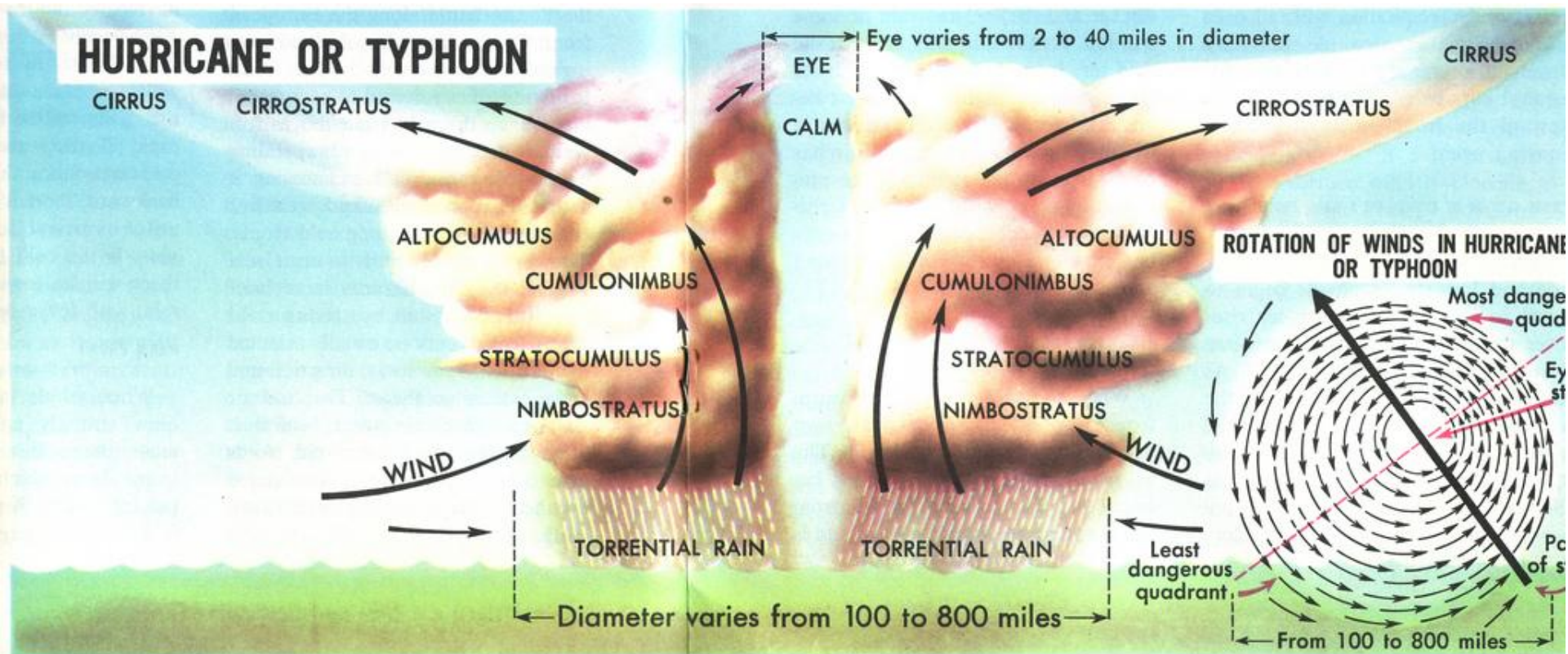
TORRENTIAL RAIN

ROTATION OF WINDS IN HURRICANE OR TYPHOON

Most dangerous quadrant

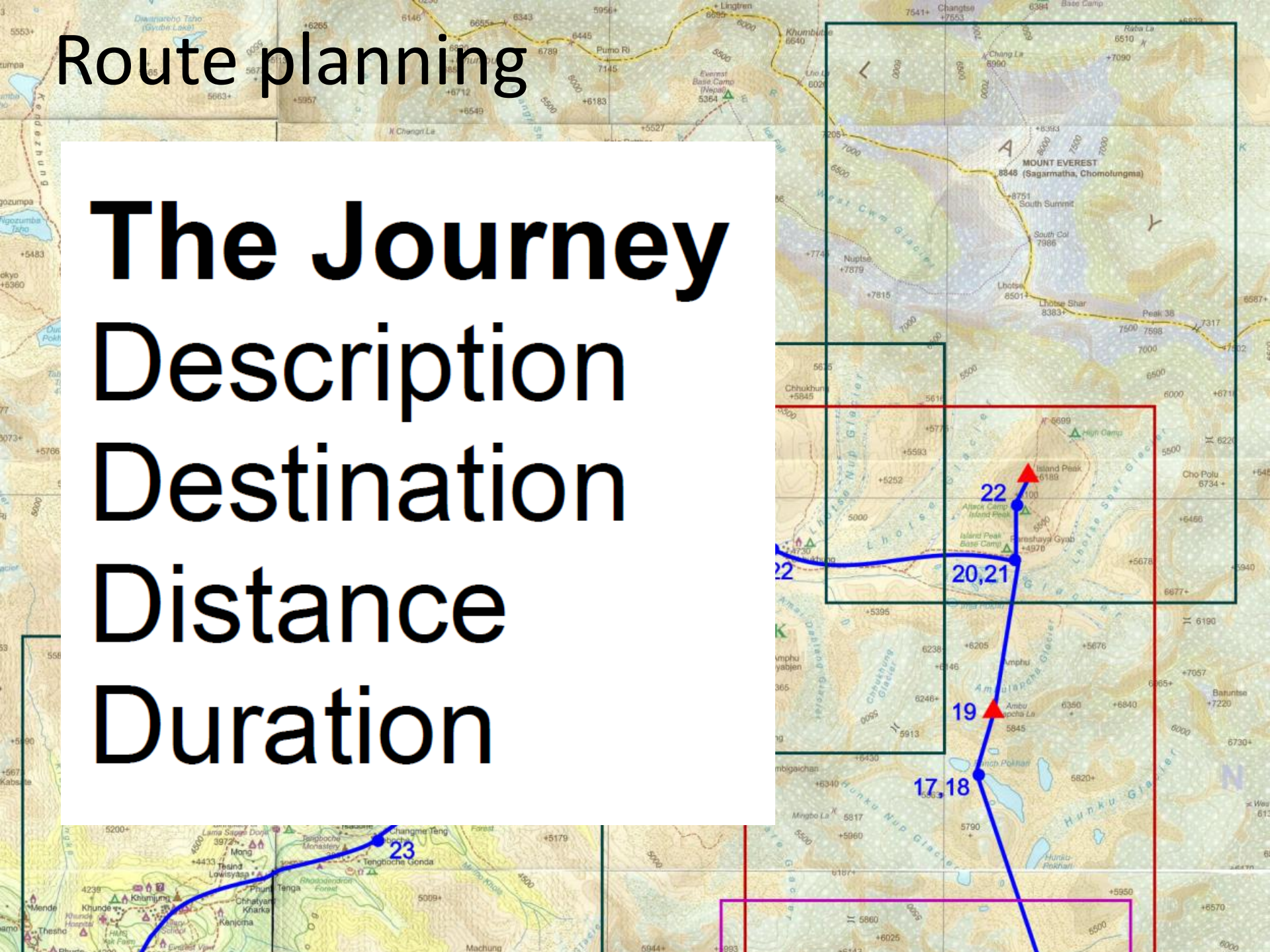
Least dangerous quadrant

From 100 to 800 miles

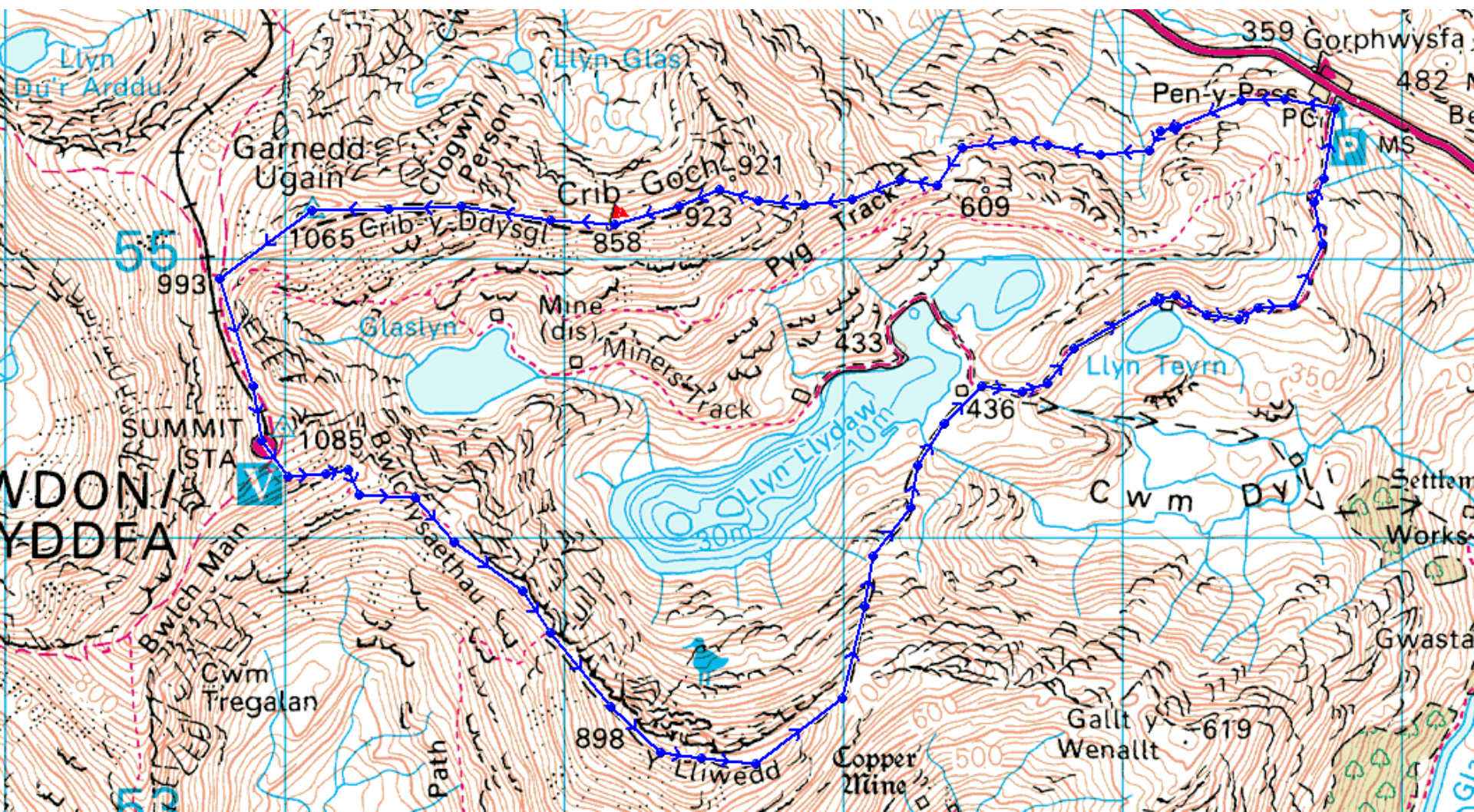


Route planning

The Journey
Description
Destination
Distance
Duration



Route planning



Maps

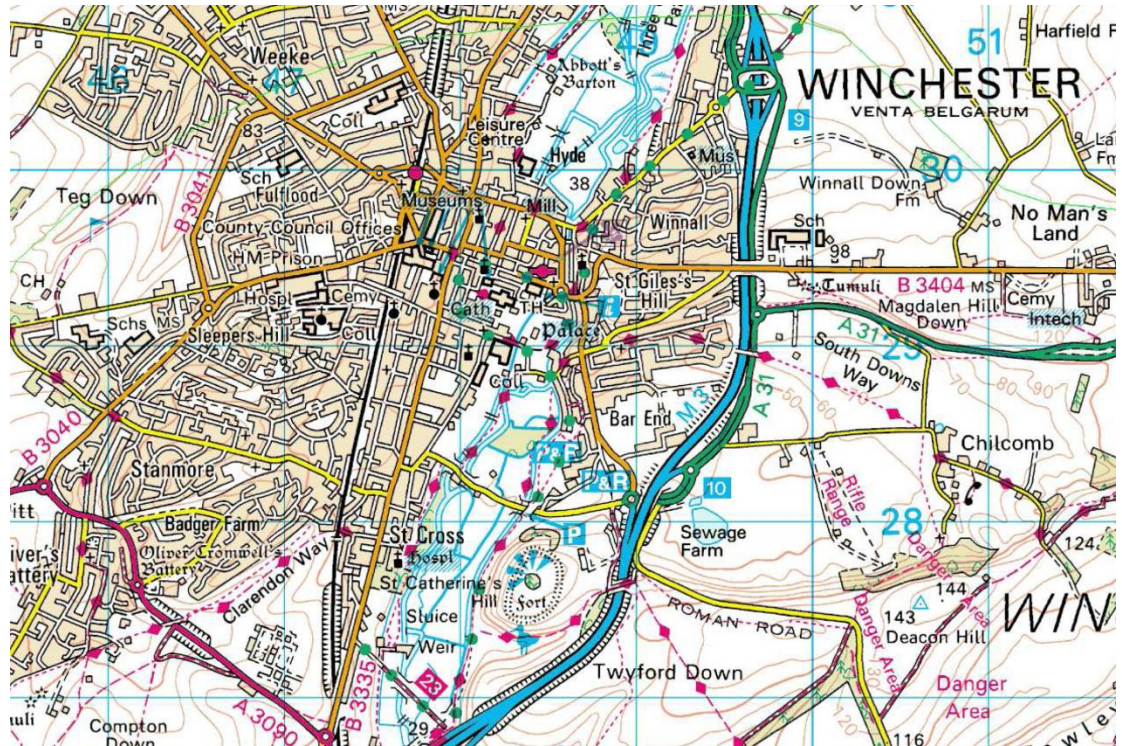
1:50,000 means 1cm per 500m

1:40,000 means 1cm per 400m

1:25,000 means 1cm per 250m



200m grid



Taken from a 1: 50,000 OS map. 1km grid

Pacing

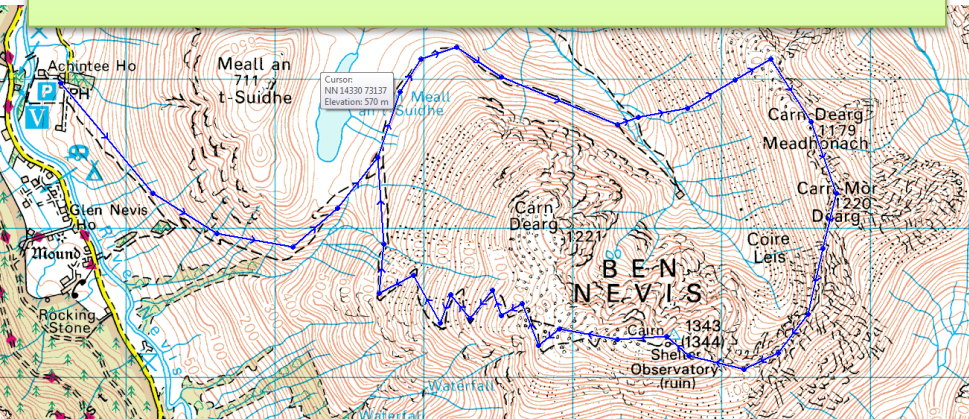
Flat 64 paces per 100m

Hilly 75 paces per 100m

AF

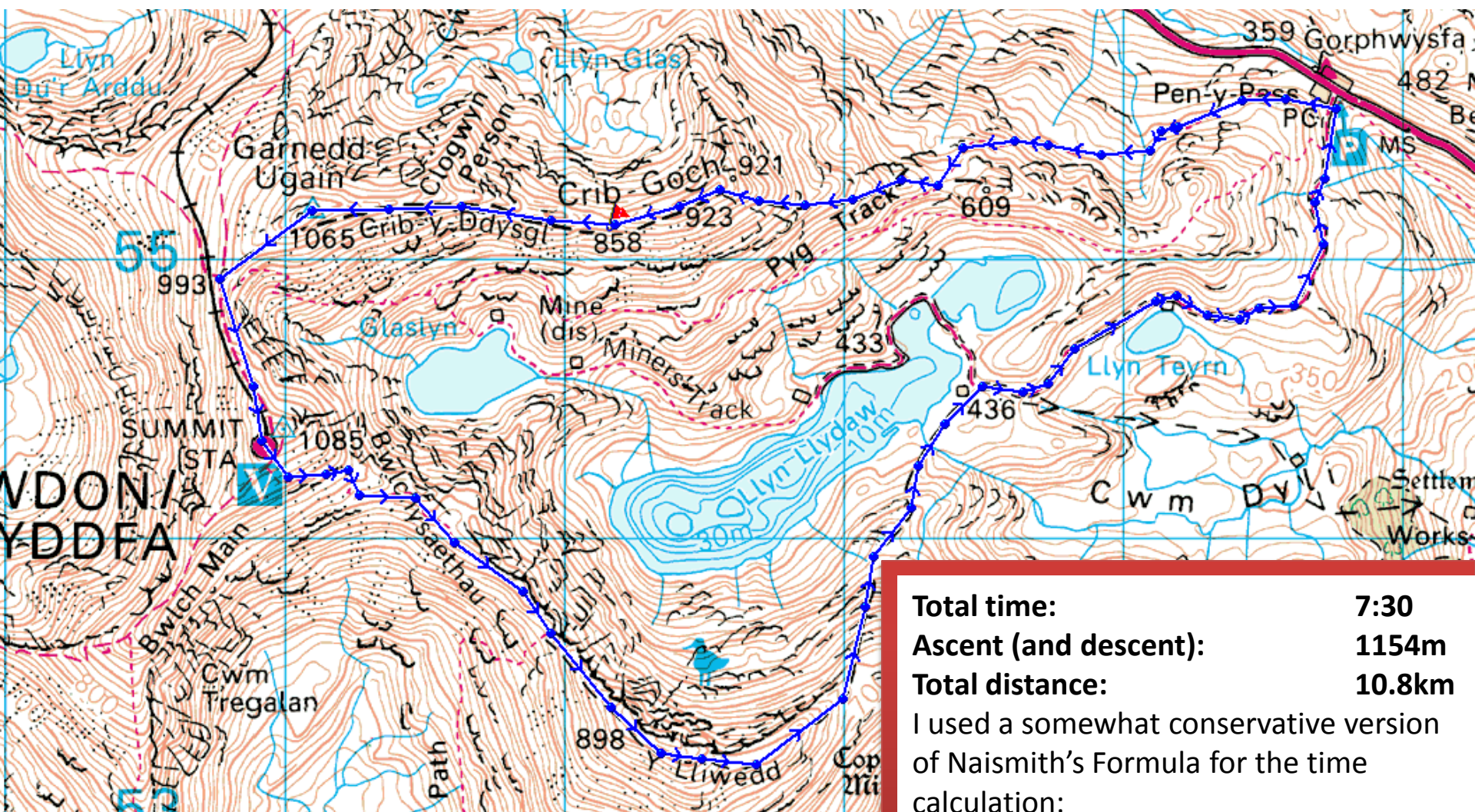
Naismith 4km per hour
+ 1 to 1.5 min per 10m
ascent

Mark where you are on a map
as you go along. Counting paces
enables you to estimate distances
within a few tens of metres



Distance travelled metres	Speed kilometres per hour			
	5	4	3	2
1000m	12 min	15 min	20 min	30 min
800m	10 min	12 min	16 min	24 min
700m	9 min	11 min	14 min	21 min
500m	6 min	7½ min	10 min	15 min
400m	5 min	6 min	8 min	12 min
200m	2½ min*	3 min	4 min	6 min
100m	1¼ min*	1½ min	2 min	3 min

Route planning



Total time:	7:30
Ascent (and descent):	1154m
Total distance:	10.8km

I used a somewhat conservative version of Naismith's Formula for the time calculation:

- 3km per hour
- 1 min per 10m ascent
- 1 min per 10m descent

Where to go?

- **England**

- New Forest
- South Downs
- Coastal paths
- Long distance '### way'
- Peak District
- Cheviot Hills
- Dartmoor
- **Lake District**



Where to go?

- **Wales**
 - Coastal path
 - Brecon Beacons
 - Black Mountains
 - Snowdonia





- **Scotland**

- Loch Lomond, Arrochar Alps
- Glen Coe
- Nevis Range, Ring of Steall
- Torridon, Skye



Aonach Mor



Carn Mor Dearg
(CMD) arête,
Ben Nevis



Where to go?

- **The Alps**

- Chamonix valley and Mont Blanc (France)
- Ecrins, France
- Matterhorn, Zermatt region (Switzerland)
- Italian Alps, Grand Paradiso
- Dolomites (Italy)
- Bernese Oberland, Eiger (Switzerland)
- Haute Route
- Alpinism, ski touring!



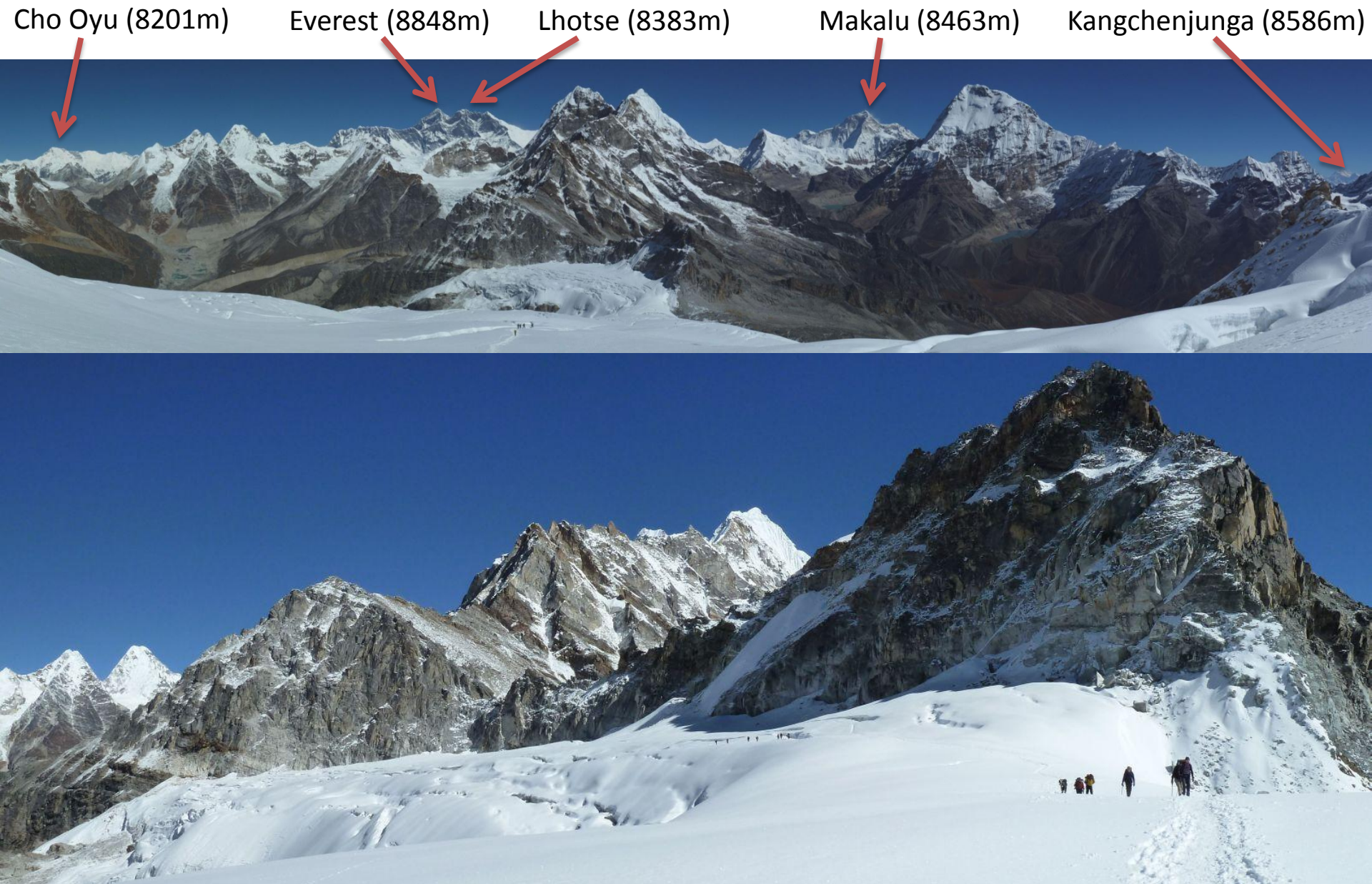
Where to go?

- **Greater Ranges**

- Morocco, Toubkal
- Pyrenees, Sierra Nevada (Spain)
- Kilimanjaro, Meru, Mt Kenya (Africa)
- Central America volcanoes (Ecuador, Bolivia ...)
- Andes, Inca trail, Patagonia
- **Himalayas**
- Polar regions



Happy adventures!



Mera peak
6476m



My first ice climb!



Mera summit photos by
Dave Kenyon



Further information and courses



**British
Mountaineering
Council**

