From the President

Spring has sprung, the Equinox is upon us, so it must be time for the Society Conference and AGM. Conference planning is nearly complete - it should be a very stimulating meeting, now running over three days, the 19th, 20th and 21st of November. The evening of the first day will include presentations of general public interest on the theme of "communicating meteorology".

The Society AGM will be held on the second evening of the conference, immediately before the conference dinner. All members are encouraged to come the AGM, to review the past year's activities and to discuss the future directions of the Society. Nominations are welcomed for any of the committee positions, as listed on the inside cover of the Newsletter.

I note with sadness the recent death of Dr John Gabites, a former Director of the Meteorological Service (see page 23 for an obituary). Dr Gabites was a champion of scientific research within the Met. Service, and helped instigate the first Met. Service annual conference, the forerunner to the Met. Society conference. There will be a special commemorative session, including a review of his life and work, at the November conference.

The Royal Society of New Zealand meeting (for constituent organisations, mentioned last time) was held in mid-July. It was a very positive day for participating Societies. There was a strong message for RSNZ that communication with constituent organisations has not been very good in the past, with many wondering about the role of RSNZ and whether affiliation carried any benefits. There is a clear desire to improve the "relevance" of RSNZ to member Societies such as ours, which should include more direct consultation with us and others.

Jim Renwick, September 2001

Meteorological Society of New Zealand
Annual Conference
Communicating Meteorology

11:00 Monday 19 November – 17:00 Wednesday 21 November 2001
Victoria University, Wellington

CONFEENCE SESSIONS

45 presentations have been accepted for this year's conference with titles covering many aspects of meteorology. This high level of demand, coupled with the desire not to have parallel sessions, has led the committee to extend the conference by half a day. Eleven sessions have been scheduled, including a session on the Monday night highlighting the conference theme of communicating meteorology.

LOCAL ARRANGEMENTS

The conference will be held at Victoria University of Wellington, located on Kelburn Parade, Wellington. Registration, presentations, and all events will be in the MacLaurin Lecture Theatre complex.

REGISTRATION

The full Registration Fee is $140. The "unwaged" (includes students) Registration Fee is $70. The registration includes the cocktail food on Monday night, the conference dinner and morning and afternoon teas.

PUBLIC SESSION

A session of the conference will be held on Monday evening with 4 presentations on the conference theme area of Communicating Meteorology. A pre-session social gathering will be held from 7-8 p.m., with coffee and finger food available free-of-charge to conference delegates ($10 to those not registered). A cash bar will be available for wine and beer. The presentations will begin at 8 p.m., and this session is open to the public free of charge.

SYMPOSIUM DINNER

The Symposium Dinner will take place following the Society's AGM on the evening of Tuesday 20 November, at the Victoria University Staff Club. The cost is included in the registration fee, but will be $60 per extra person.

ACCOMMODATION AND TRAVEL

Participants should make their own accommodation and travel arrangements.

STUDENT'S FUND

The Meteorological Society operates a "Students' Fund", which provides a grant of up to about $400, to subsidise accommodation and travel expenses for a student presenting a paper. Several awards can be made per year. Applications, with a copy of the paper

abstract, should be forwarded to the Secretary, Meteorological Society of New Zealand, P.O. Box 6523, Te Aro, Wellington, or emailed to w.gray@niwa.cri.nz

For more information please contact: Warren Gray, NIWA Greta Point, Phone (04) 386-0332, Fax (04) 386-2153, email w.gray@niwa.cri.nz.

METEOROLOGICAL SOCIETY of NEW ZEALAND 2001 SYMPOSIUM

Communicating Meteorology

11:00 Monday 19 November – 17:00 Wednesday 21 November 2001
Victoria University, Wellington

REGISTRATION FORM

Name.....

Address.....

.....

.....

Phone.....

Fax.....

Email.....

Registration Fee: (including Dinner and General Interest Evening)

(Full)	_____	$140
(Unwaged)	_____	$70
Symposium Dinner	_____	$60* per extra person
General Interest Evening (finger food, cash bar)	_____	$10* per extra person (Monday 19) (*included in full registration)
TOTAL	_____	

Please make cheques payable to Meteorological Society of New Zealand.
Post to: The Secretary, Meteorological Society of New Zealand,
P.O. Box 6523, Te Aro, Wellington, New Zealand

"UV Radiation and its Effects: an update (2002)".

26-28 March, 2002, Christchurch. Workshop.

Sponsored by NIWA, Royal Society of NZ, Ministry for Environment, National Science Strategy Committee on Climate Change, and Cancer Society.

UV radiation is by nature a crossroads between many disciplines, including atmospheric chemistry and physics, botany, zoology, materials science, health. Policy advisers, manufacturers, educationalists, and the media also have an interest in UV and its effect. These diverse groups rarely have a chance to interact. The aim of the meeting will be to provide a forum for discussion among groups involved with all aspects of the causes and effects of changes in UV radiation: from CFCs through PSCs to DNA and beyond. The workshop will include panel discussions to identify future needs for research in this area. It will be organised along similar lines to the two very successful UV workshops held in 1993 and 1997. Please contact Richard McKenzie (r.mckenzie@niwa.cri.nz) for further information.

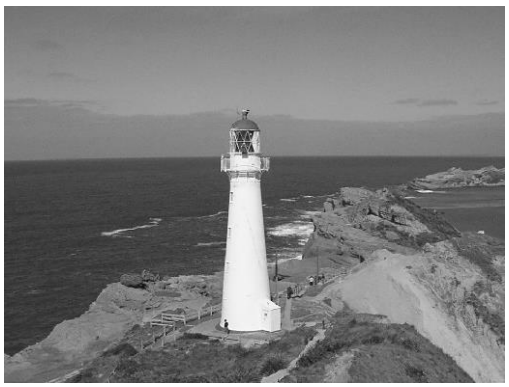
From the Branches

Auckland MetSoc had a meeting at Physics bldg. of Auckland Univ. on 3 July where Dr. Jo Evans of Auck. Univ. Marine lab at Leigh (near Warkworth) presented an account on NEW ZEALAND'S WETTEST HOUR.

On the morning of Wednesday 30 May 2001, the raingauge at Leigh measured 109mm between 1:30am and 2:30am. This set a new "wettest hour" record, which was previously measured at Whenuapai (107mm) on a hot summer's day in 1966. A dozen members attended this talk.

Next meeting is a talk by Georgina Griffiths (NIWA) on "Climate Prediction" at the NIWA Corporate office 269 Kyber Pass Road, 6:30pm, Thursday 11 October. ***Bob McDavitt***

Wairarapa Weather Watchers:
Meeting held on Monday 6 August 2001. Twenty-four attended (one of our best-attended meetings). Main topic was STRATUS cloud, how it forms and in what thermal and humidity conditions, and what causes it to clear. Current membership 41; three resignations accepted, two due to advancing years, the other person found that he did not get much out of the meetings. ***Alex Neale***



Christchurch

Seminars:
28 June 2001, Joanne Purdy (PhD student, Physics Department, University of Auckland): 'Changes in rainfall nature with location on the West Coast'.

16 August 2001
Dr. Mike Durand (Natural Hazard Research Centre & Centre for Atmospheric Research, University of Canterbury, Christchurch): 'The biggest chimney stacks in Europe (they're pretty big) or the impact of volcanic degassing from Etna, Stromboli and Laki upon air quality (it's pretty bad)'

Canterbury Weather Watcher Meeting on '2001 Winter Weather.
13 September 2001. Including presentations by Tony Trewinnard (Blues Skies) on the weather patterns through the winter and by Teresa Aberkane (Environment Canterbury) on air pollution in Christchurch in 2001 and how it compares to other years and other places (Timaru and Kaiapoi).

OFFICIAL NOTIFICATION TO ALL MEMBERS OF ANNUAL GENERAL MEETING

The 22nd AGM of the Meteorological Society of New Zealand is to be held at Lecture Theatre LT102 in the McLaurin Building of Victoria University, on Tuesday 20th November 2001. Meeting commences at 6pm and should take around an hour. All members are invited to attend. Please pass any agenda items on to a member of the committee.

METEOROLOGICAL SOCIETY OF NEW ZEALAND INCORPORATED
INCOME AND EXPENDITURE STATEMENT FOR 12 MONTHS TO 31 JULY 2001

INCOME	THIS YEAR	LAST YEAR
1999 conference proceeds	1,134	
Subscriptions (2 see notes)	2,136	10,666
Interest	491	684
Interest on term deposit (3)	335	
GST	630	54
MetService grant	1,600	1,600
NIWA telephone subsidy (4)	750	
Reprints Weather & Climate	76	
Share profit 2000 joint conference	10,432	
Miscellaneous	70	
Total Income	17,654	13,004
LESS EXPENDITURE		
Weather & Climate	2,928	2,878
Newsletter	5,305	4,923

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Meetings	167	55
Royal Society NZ fee	1,250	1,250
Sundry postage, stationery	67	391
PO Box fee	125	120
Media awards	73	
Miscellaneous	48	
Student conference grants	1,400	
Total Expenditure	9,915	11,065
NET PROFIT	7,739	1,939

METEOROLOGICAL SOCIETY OF NEW ZEALAND INCORPORATED
BALANCE SHEET AS AT 31 JULY 2001

ASSETS	THIS YEAR	LAST YEAR
Petty cash	25	25
Current acct 00 - BNZ	6,292	11,552
Term investment – BNZ	5,335	5,000
Student conf. fund – BNZ	20,566	6,836
Income accrued	423	670
Sundry Debtors	76	
Total assets	32,641	24,159
LESS LIABILITIES		
Subscriptions paid in advance	743	
NET WORTH	31,898	24,159
REPRESENTED BY:		
Accumulated Funds:		
Balance at beginning of year	24,159	22,220
Plus excess of income	7,739	1,939
Total Accumulated Funds	31,898	24,159

This statement of accounts should be read in conjunction with the attached notes. To be signed on approval at AGM on behalf of the Committee by President and Treasurer

AUDITOR'S REPORT TO THE MEMBERS OF THE METEOROLOGICAL SOCIETY OF NEW ZEALAND INC

I have examined the above Balance Sheet and the Statement of Income and Expenditure together with the financial records of the Society and have obtained all the information and explanations I have required. In my opinion the Balance Sheet and the Income and Expenditure Statement give a true and fair view of the financial position of the Society as at 31 July 2001.

Signed A. I. Tomlinson,
Auditor to the Meteorological Society of New Zealand Inc.

METEOROLOGICAL SOCIETY OF NEW ZEALAND INC.
NOTES TO THE FINANCIAL ACCOUNTS FOR THE YEAR ENDED 31 JULY 2001

1. STATEMENT OF ACCOUNTING POLICIES
Accrual accounting is used to match expenses to revenue as appropriate. There has been no change in accounting policies.

2. SUBSCRIPTIONS: Subscriptions in arrears for 1999/00 or earlier years now paid. Membership suspended for those in arrears by two or more years.

3. INTEREST: Interest on SCF and cheque accounts combined under Interest.

4. NIWA TELEPHONE SUBSIDY
Lump sum payment towards cost of committee teleconferences but see note 6.

5. CURRENT ACCOUNT 00 - BNZ: Proceeds from the 1998 conference ($1790) which were being held in this account have now been transferred to the SCF.

6. CONTINGENT LIABILITIES: Vol. 21 of Weather and Climate yet to be published at a cost of approximately $3000. Costs of teleconference calls outstanding not known but estimated at $600-$800.

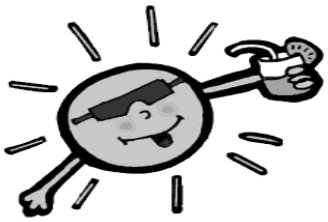
7. 2002/2003 BUDGET: On the basis of current costs and commitments it is recommended that the present subscription fees of $25 for ordinary members and $75 for institutional members continue in 2002/03.

NATIONAL CLIMATE SUMMARY - WINTER 2001

SUNNY AND DRY, EXTREMES OF WARMTH AND COLD

Mixed climatic conditions in winter resulted in a variety of extremes and contrasts. The season featured:

- **Very sunny conditions in Taranaki, Nelson and Westland**
- **Unusually low rainfall in western Bay of Plenty**
- **Variable temperatures in many areas**
- **Freezing mid-winter conditions and occasional low level snowfalls**



Seasonal rainfall was below average in many regions, including Taupo and most South Island hydro-lake catchment areas. Totals were extremely low in western Bay of Plenty, being less than 50 percent of normal. Rainfall was above average only in parts of south Taranaki and south Westland. Soil moisture continues to be lower than normal in central Marlborough, north Canterbury, and north Otago and Central Otago.

Winter began with a much warmer than average June, followed by a very cold frosty July, ending with rather mild August conditions. This combination resulted in near average winter temperatures overall throughout much of New Zealand. However, the winter was warmer than average in Wellington, Blenheim, and in most coastal areas of Southland and Otago, and colder than average in parts of Bay of Plenty, southern Hawke's Bay and Westland. The national average temperature was 8.2°C, which was 0.1°C above the 1961–1990 normal.
It was very much sunnier than average in Taranaki, Nelson and Westland.
The overall winter climate pattern was the result of variable pressure anomalies over New Zealand, with no particular type dominating.

BELOW AVERAGE RAINFALL IN MANY REGIONS, ESPECIALLY WESTERN BAY OF PLENTY
Extremely low winter rainfall was recorded in western Bay of Plenty, with totals less than 50 percent of normal. It was also drier than average in many other regions, including eastern Northland, Waikato, Coromandel, the central North Island volcanic plateau, central Hawke's Bay, Wellington, Golden Bay, northern and inland south Canterbury, and north Otago, all with totals between 50 and 75 percent of normal.

Unusually low winter rainfall was recorded at:

Location	Rainfall (mm)	% normal	Year records began	Comments
Hamilton, Ruakura	188	52	1905	3rd lowest
Tauranga Airport	170	44	1889	5th lowest
Te Puke	201	41	1973	Lowest
Rotorua	152	37	1899	Lowest
Taupo	159	65	1950	3rd lowest

Rainfall ranged from 110 to 120 percent of average in parts of south Taranaki and south Westland and was near average in other regions.

NEAR AVERAGE TEMPERATURES OVERALL FOR MOST AREAS

Mean winter temperatures were near average throughout much of New Zealand. However, they were at least 0.5°C above average in Wellington, about Blenheim, and in most coastal areas of Southland and Otago. Mean temperatures were around 0.5°C below average in parts of Bay of Plenty, southern Hawke's Bay and Westland.

VERY SUNNY IN TARANAKI, NELSON AND WESTLAND

Sunshine and solar radiation totals were at least 105 percent of normal in northern and western regions of both islands, including Gisborne and Canterbury. However, it was very sunny in Taranaki, Nelson and Westland, with totals exceeding 120 percent of normal. Most other regions experienced near average sunshine hours.

Near record high winter sunshine hours were recorded at:

Location	Sunshine (hr)	% normal	Year records began	Comments
New Plymouth Airport	490	123	1973	2nd highest
Hokitika	455	125	1913	3rd highest
Nelson Airport	561	121	1949	2nd highest

HIGHLIGHTS

Extreme temperatures

- The highest air temperature for the winter was 23.2°C, recorded at Dargaville on 22 August. The highest winter air temperature on record for Dargaville is 24.4° C.
- The lowest air temperature for the winter was –12.2°C, recorded at Hanmer Forest on 5 July. The lowest winter air temperature on record for Hanmer Forest is –13.2° C.

Fog

- **Many sheltered Central Otago locations suffered not only severe frost during the first two weeks of July, but also freezing fog; some sites not seeing the sun for 14 days.**

Southerly gales and snowfall

- **Bitterly cold southerlies brought snowfall (a few centimetres deep) to sea level in many eastern South Island regions on 10 June, especially in Southland and Otago, temporarily closing Dunedin's northern motorway. Gales affected Cook Strait, disrupting ferry services, snow and ice lay at the Rimutaka Hill summit north of Wellington and closed the Desert Road in the central North Island.**
- **High winds and heavy seas buffeted southern and eastern coasts on 28 and 29 July, creating 11-metre swells in Cook Strait. The Cook Strait fast ferry was forced to turn back to Wellington, and many other ferry sailings were cancelled, disrupting travel for thousands of passengers. Heavy snowfalls were recorded in most mountainous regions, and snow and ice closed Arthur's Pass. Ruapehu ski field reported its largest snowfall in 20 years.**
- **A depression developed on a southerly front on 14 August and later deepened just east of Gisborne. The associated weather system produced extensive snowfall throughout the central North Island volcanic plateau on the 14th and 15th. Snowfall 30 cm deep was reported in Ohakune, the town being isolated by snow-closed roads. The Taupo to Napier highway was also closed. Snowfall 20 cm deep at Waiouru was reported as being the "biggest and deepest since 1974". At the same time southerlies up to violent-storm force (mean wind speeds to 117 km/h, and gusts to 189 km/h) occurred in Cook Strait. Huge swells and 11-metre waves resulted in the cancellation of ferry crossings on 15th August.**

High rainfall

Heavy rainfall, totaling as much as 150 mm, was reported in the Coromandel over the night of 30/31 August with surface flooding in some areas.

For further information, please contact: Dr Jim Salinger, j.salinger@niwa.cri.nz NIWA Auckland, Tel (09) 375 2053 .
This report may also be found on the NIWA web site also at http://www.niwa.cri.nz/climsum_latest.html

Colour graphics of monthly and seasonal rain and temperature anomalies are at http://www.niwa.cri.nz/ncc/current.html as a pdf file. These colour maps do not convert well enough to "shades of grey" for us to bring them here, so, instead, the next few pages give MONTHLY HIGHLIGHTS.

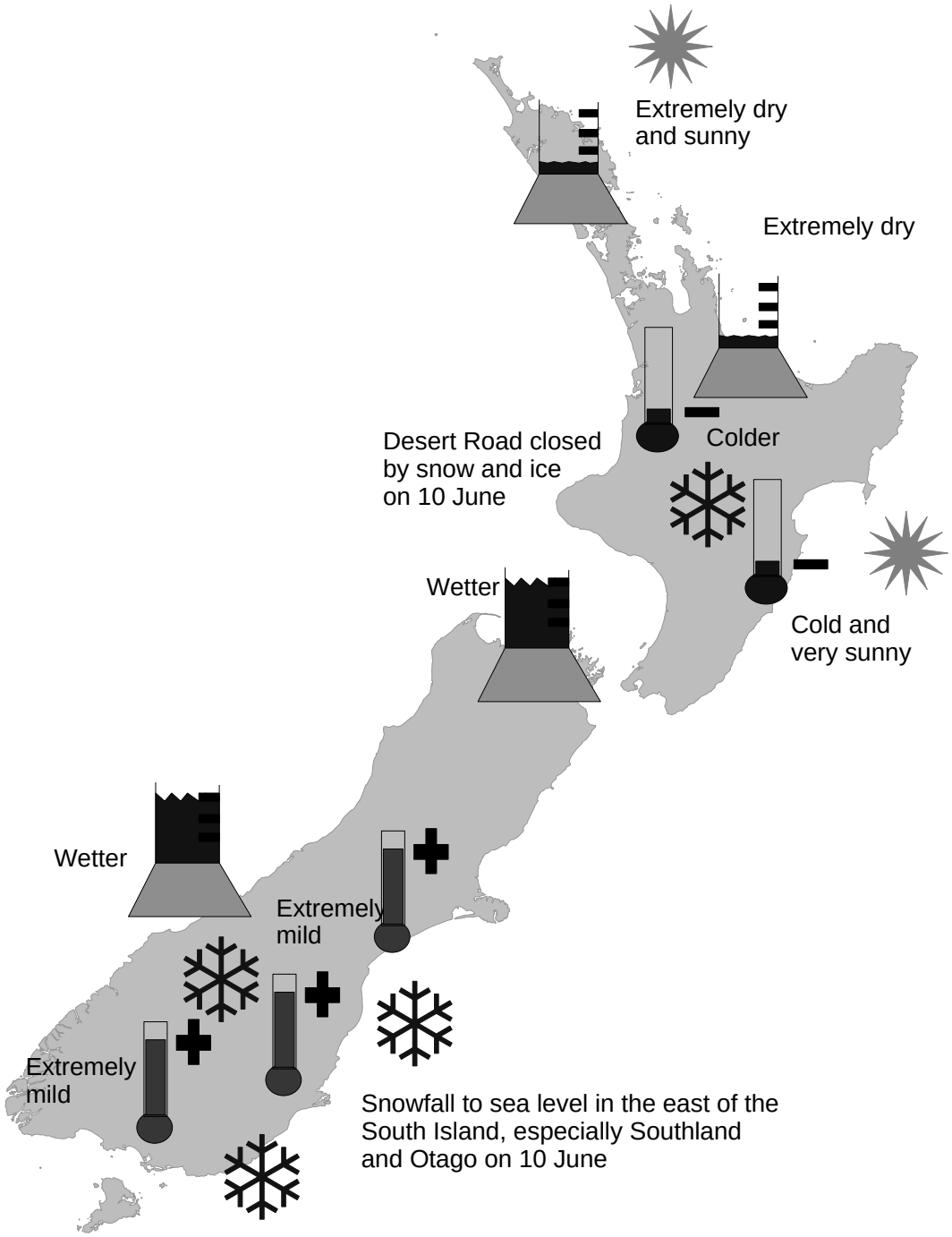
NIWA

JUNE 2001 CLIMATE HIGHLIGHTS

DRY AND SUNNY IN THE NORTH AND EAST OF THE NORTH ISLAND

EXTREMELY MILD OVER THE SOUTH OF THE SOUTH ISLAND

COLD IN WAIKATO, INLAND BAY OF PLENTY AND HAWKE'S BAY



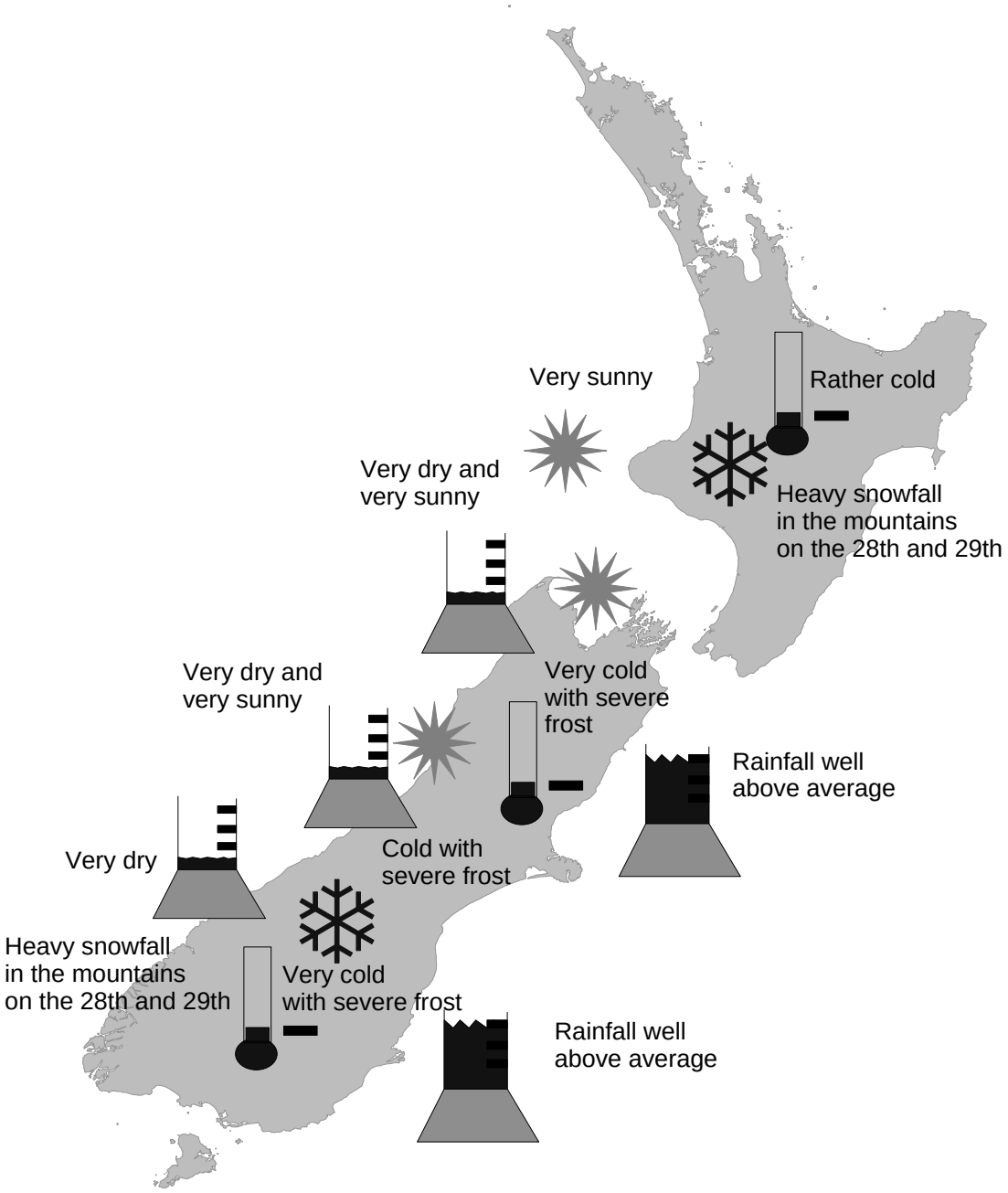
NIWA

JULY 2001 CLIMATE HIGHLIGHTS

VERY LOW RAINFALL IN THE NORTH AND WEST OF THE SOUTH ISLAND AND SOUTHERN LAKES

WELL BELOW AVERAGE TEMPERATURES IN MANY AREAS

EXTREMELY SUNNY IN TARANAKI, NELSON AND WESTLAND



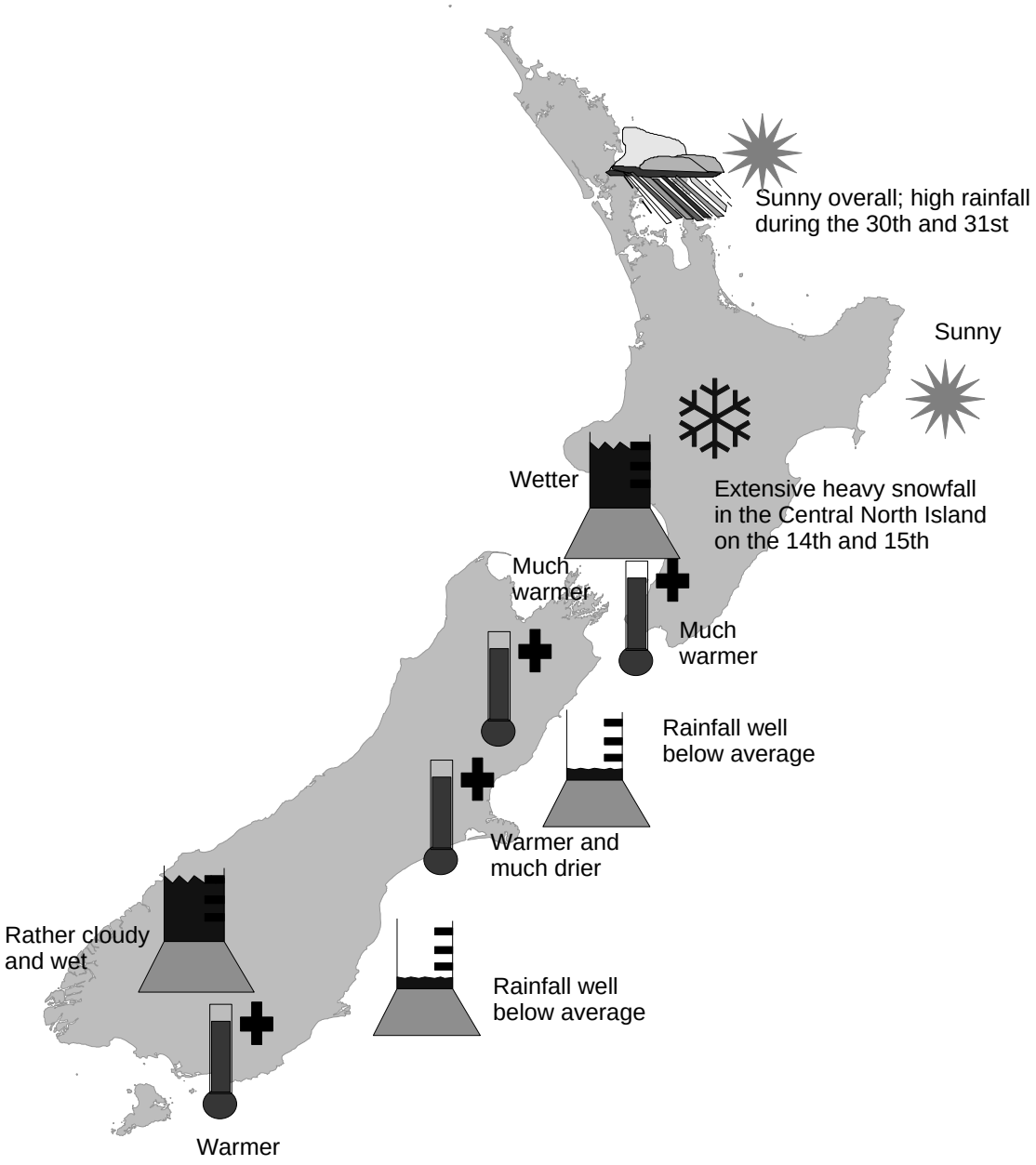
NIWA

AUGUST 2001 CLIMATE HIGHLIGHTS

MILD, ESPECIALLY THROUGHOUT CENTRAL NEW ZEALAND

WELL BELOW AVERAGE RAINFALL IN THE EASTERN SOUTH ISLAND

WETTER IN SOME SOUTHERN AND WESTERN REGIONS



MONTHLY NOTES FOR WINTER 2001 - CHRISTCHURCH

JUNE

This was a sunny rather changeable month with a number of fronts. Airflows often came from the west or northwest, resulting in considerably milder than normal daytime maximum temperatures, but the frequency of clear days also resulted in many frosty nights. The most interesting weather was on the weekend of 9th/10th. Saturday the 9th saw temperatures reach around 20 C in warm northwesterly conditions. However, by Sunday morning a very cold and wet southerly had become established, with snow already dusting the higher Port Hills. As the day got progressively colder, squalls delivered rain, hail, sleet, and by midafternoon, flurries of snow. A light dusting of snow was visible in many parts of the city by the next morning, after the weather had cleared. Snow also fell to near sea level on Banks Peninsula, but there was very little inland. Several other southerly changes occurred, but only brought brief outbreaks of rain, with snow only on the high country and highest hills of the Peninsula.

JULY

A large anticyclone became slow moving over and to the east of the South Island for the first 10 days of the month. This meant fine weather for the city, but at the price of severe frosts; nights being very much colder than normal, and even daytime maximums remaining below average. Towards the end of this period, the high actually moved (or re-centred) southwestwards, so that by the 11th a southerly flow covered the area and persisted through the 14th. This flow began with a brief period of rain in the city, plus some snow at Hanmer, where extremely severe frosts had resulted in a layer of freezing air remaining when the moisture arrived. From the 16th to the 22nd a deep low-pressure system slowing crossed New Zealand with moist southerly flows bringing rain and drizzle to Christchurch for most of the time. Snow fell on the inland high country and valleys; by the end of the period Mt Hutt had one of its thickest snow-depths on record.

From the 23rd, the weather settled down to a pattern of brief southerly changes (with only brief rain) and ridges of high pressure. Some further severe frosts occurred, but as the flow tended more to the west from the 25th to the 29th, daytime temperatures were milder. In the end however, a few mild days couldn't save the city from recording one of its coldest July's for many years. While many other parts of the country (including parts of inland Canterbury) had a very dry month, Christchurch turned out a little wetter than usual, thanks to the unsettled period during the middle of the month.

AUGUST

After a cold July, the weather changed yet again. August was drier and milder than normal. Winds were more often from the northerly quarter, and while troughs often crossed over, they generally brought either brief falls or no rain to the city. A significant cold southerly outbreak did occur from the 13 to 15th though. This southerly was at its most intense on the morning of the 14th, with snow above about 300 metres on the Port Hills and some brief hail in the city. By contrast, northwesterly airstreams gave a number of mild days, with maximums reaching the high teens on several occasions.

Ben Tichborne

Obituary for Dr. John Gabites, 1913-2001.

Dr. John Gabites passed away in Wellington on 19 August 2001. He was elected to the position of Honorary member of the Met. Society in 1999.

John Gabites was born in Foxton on 4 July 1913, and grew up in Christchurch. As a teenager he developed a life-long love for radio and acquired an amateur radio operator's license.

He transferred from the Magnetic Survey department to the Meteorological Service in 1934 and was meteorologist in charge at Wigram in 1939, then served at Rongotai, Woodbourne and Auckland. This was a time of aviation expansion and he proved to be an exceedingly versatile forecaster – if needed he would take down the Morse radio reports, plot and analyse the weather map, and then issue the forecasts.

During World War 2 he spent some time as a forecaster at RNZAF Pacific Island forward stations, attached to 3 Squadron RNZAF at Espiritu Santo in the New Hebrides. His duties including flying each afternoon as an observer-gunner to acquaint himself better with the weather in the area (air crew reports were the only direct source of weather information), and he was several times in action. In November 1942 he worked with the US Navy in the Solomons, and in 1944 he helped the RNZAF task force in Bougainville.

Following World War 2 he completed a doctorate at MIT and returned to New Zealand in 1950 to develop the research branch of the meteorological Service. He started a series of scientific seminars in 1951 for Wellington staff, and this was extended to all Branch Offices in 1952 by holding the first of what became an annual scientific conference for professional staff. One of the reasons for the formation of our society was to ensure the continuation (and extension into other realms) of these conferences.

His scientific standing in New Zealand was recognised by his election as a Fellow of the Royal Society of New Zealand (1962), and international recognition includes his election as President of the WMO Commission for Aerology (now Atmospheric Sciences) 1965-68. He was Director of the NZ Meteorological Service from 1965 to his retirement in 1973. Then he became Director of the Fiji Meteorological from 1975-79 - the first Director of an independent Fijian Meteorological Service. His contribution to that developing service was wholly in keeping with his contribution to the advancement of meteorology in New Zealand.

Dr. Gabites was a natural scientist. Inquisitive and immensely well-read, he had a huge capacity for organising the information process needed to synthesis weather observations from land, sea, planes, balloons, satellite and radar all into one weather map to ensure the best possible, continuously-updated working model of the atmosphere.

At the start of our November conference this year, there is to be a special commemorative session including a review of meteorological developments during his life and work.

Obituary for Colin Green

Colin Green was about the same age as Doctor John Gabites, and passed away at about the same time. He joined the New Zealand Meteorological Service in 1936 and spent the period 1947 to 1950 forecasting tropical weather in Fiji. Upon his return to Kelburn he eventually became Assistant Director for Services, and also had a wonderful hobby looking after "old cars". Colin retired in 1972 and has been a loyal member of the Met. Society ever since.

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Weather on the Web:

A book on Climate Change

The following report is a succinct review of the current state of climate change research: http://books.nap.edu/html/climatechange/

POWDER MAKES CLOUD GO AWAY

Farmers may occasionally pray for rain, but sports fans and sailors often wish for it to go away. Storm experts have answered that call by plucking a cloud from the sky for the first time, says a report in a recent New Scientist. Researchers at Dyn-O-Mat accomplished the feat by sprinkling a water-absorbing powder over the cloud. The company hopes it will one day be used to soften the impact of deadly hurricanes and tropical storms. "It is the moisture that gives hurricanes their strength," said Peter Cordani, who runs Dyn-O-Mat. "In the case of a huge hurricane, we would not be trying to soak it up altogether. But what we would do is break it up and reduce its strength and killing potential". The powder could also banish rain over open-air events and sports stadiums.

HOME-SIZED WIND GENERATOR

In order to reduce electricity consumption, there is a renewed interest in alternative energy sources to supplement or avoid electricity purchased from the power grid. One such technology is a rooftop-mounted, wind-driven generator that blends into the roof line and matches common roofing materials. Specially designed cylindrical roofing tiles with a V-notch to fit the ridge are secured to the joists and to each other, forming a continuous, rigid support along the top of the roof. A small electrical generator is mounted inside the housing, with an air inlet and outlet on either side, covered by grills to protect against animals and weather.

Air flows through the inlet, turns the impellers, and drives the shaft in the coils, creating electrical current. The system can be fitted with a routing device that diverts excess energy back to the local, regional, or national grid. Customers would be credited for the energy sold back to the utility.

Get the complete report at:http://link.abpi.net/l.php?20010802A2 .

HURRICANES GETTING FIERCER, EXPERTS WARN

By John von Radowitz The Press Association; London, July 25,

Hurricanes have been getting fiercer and are likely to wreak even more havoc over the next 10 to 40 years, weather experts warn.

The last six years have seen a 2.5-fold increase in major hurricanes, and the years 1995 to 2000 experienced the most intense level of North Atlantic storm activity on record. In 1998 one of the worst storms, Hurricane Mitch, killed at least 10,000 people in central America and caused untold damage to property.

According to US researchers this was not a random phenomenon, but part of a long-term trend that was likely to last for the next 10 to 40 years. Furthermore, global warming could cause hurricanes to become even more powerful than they are now. The scientists, led by Stanley Goldenberg, from the National Oceanic and Atmospheric Administration in Miami, analysed the history of two key conditions that help dictate whether hurricanes form. Measurements of both since the late 1800s showed a pattern that switched between intense and quiet periods every few decades.

Between 1971 and 1994, hurricane activity in the region stretching from the northern coast of Mexico to the North Atlantic was generally low. But the past six years had seen a doubling of overall hurricane activity, said the researchers, whose findings appeared in the journal Science. The North Atlantic basin was in the grip of an intense hurricane phase, which was likely to last for many years to come. The two key conditions for hurricane activity are sea surface temperature and vertical wind shear - the amount of changing wind direction at different heights. Warm sea surface temperatures and low vertical wind shear both favour the formation of hurricanes.

In an accompanying Science article, Lennart Bengtsson, from the University of Reading and the Max Planck Institute for Meteorology in Hamburg, Germany, warned of worsening hurricanes in the future. Even if the number of cyclones did not increase substantially, he said, they could still become more destructive. "Given optimum conditions in a future warmer climate, with an atmosphere potentially holding more moisture, the development of more intense cyclones cannot be excluded," he wrote.

(Editors Note: So far this year the Atlantic tropical cyclones have been rather tame, with no hurricanes touching the US, a new record. Also the South Pacific Tropical Cyclone season last year didn't start until 17 Feb, the latest start on record. So it ain't simple).

CONSQUENCES OF CRYING WOLF

Hong Kong weathermen were under fire in July after businesses shut down for the second time in a month amid warnings a huge typhoon was on the way that in the end just breezed past the territory.

Weathermen hoisted the signal eight warning early yesterday as Typhoon Yutu approached, forcing schools, businesses, the stock

market, government offices, and courts to stay closed, and paralysing most transport links. The business community estimated they had lost more than three billion Hong Kong dollars ($NZ948.69 million) in one day, added to the losses incurred during Typhoon Utor earlier in July. Trading on the stock exchange was wiped out for the day, with recent turnover already thin amid a global downturn. Neither of the storms made a direct hit on the territory, with Yutu bringing even milder winds and rains than Utor when it struck on July 6. Many people took advantage of an extra day off work to stroll around the unusually traffic-free streets and enjoy a snack at many of the small restaurants that decided to open.

"Of course, the observatory is obliged to err on the side of caution when a typhoon approaches," said the English-language iMail. It added "it was a surprise to see Macau with a lower storm signal although it was closer to Yutu's path. No doubt the observatory will come up with an explanation for this extra caution and it will be welcome. But the fact that so many of us missed a day's work for no apparent reason is cause for concern," it said.

The Hong Kong Observatory conceded that when it hoisted the eight signal, the wind speed in the territory's famous Victoria Harbour fell short of the 63 kilometres per hour required for such a warning. A scientific officer at the observatory said the "safety of the public was the priority" as the typhoon was then just 160km from Hong Kong.

DE-MYSTIFYING THE KYOTO PROTOCOL – CHEWING THE CUD

Wellington, July 18

The Kyoto Protocol is one of those subjects that falls into the "worthy but boring" category, but it's one, which affects all New Zealanders, reports SHARON LUNDY of NZPA.

Cows chewing the cud is a concept familiar to most New Zealanders - they eat their feed, then regurgitate it and chew it again. What we're not so familiar with is the effect that regurgitation by cows and all other ruminants, such as sheep and deer, is having on the environment; the action produces a lot of wind which leaves the animal (90 percent through belching, 10 percent through flatulence) as mostly methane. Methane is one of the greenhouse gases the Kyoto Protocol aims to cut, along with carbon dioxide, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride.

The gases act as a blanket to keep in some of the sun's warmth, making life on earth possible. But their increasing levels mean the blanket is getting thicker, trapping heat closer to the Earth's surface and leading to climate change or global warming. That climate change leads to such things as extreme weather events (droughts or floods), temperature increases and sea-level rises. These are problems which might not seem to affect us, especially if we're city dwellers. But we're all affected when lack of rain pushes up the price of electricity, and the whole economy suffers

when drought means farmers have to run less stock and therefore exports fall.

Energy Minister Pete Hodgson was in Bonn (Germany) in July attending a conference of officials and ministers from the 84 countries that signed the 1997 Kyoto Protocol. The protocol requires countries to reduce their greenhouse gas emissions to 1990 levels by 2008-2012 and the Bonn meeting aims to start formulating rules for doing so, as well as rules for compliance and "trading". That means countries can sell their allocation if they are below target or buy quota if they are above.

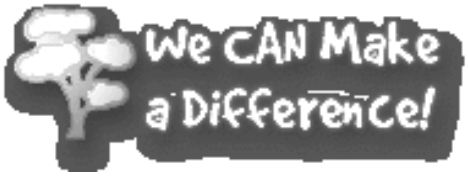
For New Zealand, the fastest-growing problem is our CO2 emissions, which increased 20 percent from 1990-2000 and are expected to double again by 2010. But thanks to our burping cows and belching sheep, methane is our largest emission, and methane is 20 times more damaging to the environment than CO2. What ruminants eat and how they digest it is under the microscope and research into reducing their wind looks promising, Mr. Hodgson says. "This is the topic that gives rise to endless headlines about flatulence tax, and some people find it really rather funny," he says. "If our largest producer of methane happens to be a ruminant digestion system, and if we can make that digestion system more efficient by the use of supplements into the feed, say, then actually we will get not only more efficient animals out of it - cattle that produce more beef or more milk or sheep that produce more wool for the same amount of food - but we reduce our methane emissions. And it is entirely possible that our contribution to the world greenhouse issue may come, when one looks back 20 years from now, in ruminant physiology, rather than in the invention of a fuel cell for motor cars. This is our fuel cell."

"The other area is animal breeding - is there a line of cattle or sheep that naturally has lower methane emissions, is naturally a more efficient food converter? "Provisionally promising" research into both areas is under way, mostly at Crown Research Institutes, but Mr. Hodgson warns results are some years away.

GLOBAL WARMING

The NZ Government spends about $24 million a year on climate change research, which includes anything from looking at the atmosphere in the Antarctic to ruminant physiology. Suggestions of charging farmers a "flatulence tax" for their livestock have been met with outrage, and Mr. Hodgson says no one from cabinet has asked for work on a methane tax. "I think trying to tax production as bluntly as that is foolish and my personal view is this, that progress on methane emissions will come from research," he says. But he says the primary production private sector - such as

Federated Farmers, the dairy industry and the meat and wool boards - should do its bit and increase investment in such research.



The Kyoto Protocol needs to be ratified by at least 55 of the 84 nations which have signed up to it, and those 55 must include the nations responsible for 55 percent of the western world's CO2 emissions. Mr. Burton likes those requirements, saying they ensure both third world and large western nation involvement. But he admits the protocol is some way off being implemented. "The climate, if you will, for this meeting is not auspicious in the sense that the largest emitter (the United States) is no longer indicating its preparedness to be part of the Kyoto Protocol," he says. "We are looking to the Americans for some sign of what they intend to do in the stead of Kyoto and so far we've received rather little." However, the European nations are keen for progress on it, as is New Zealand. "And when we have a ratifiable protocol, which we do not have at the moment, it is still New Zealand's intention to ratify it," he says. But he reiterates Bonn is not where countries will decide to ratify; instead, it is a rules-negotiating conference.

The worth of carbon "sinks" is one area New Zealand has particular interest in. A forest sink is a growing or expanding forest that absorbs and stores CO2, thus removing it from the atmosphere. Under the protocol, New Zealand would receive "sink credits" based on the carbon in forests planted since January 1, 1990, on previously non-forested land. Planting rates here boomed in the 1990s, rising to an average of 65,000ha a year from 43,500ha. New Zealand allocation over the protocol's first commitment period of 2008-2012 is 363 million tonnes of CO2 equivalent; our "Kyoto forests" are expected to remove 113 million tonnes of CO2 equivalent. "Sink credits could generate significant revenue for New Zealand in international carbon trading," Mr. Hodgson says.

United Nations Secretary-General Kofu Annan made an impassioned plea for nations to use this global climate meeting to stick to a commitment to cut emissions of gases blamed for global warming. "Climate change is occurring. It's real. We have enough evidence to know that it is happening," Annan told a news conference. "We do not have to wait for perfect science to act. Each day we fail to act we put the earth at risk," Annan said.

The United States said it would not ratify the Kyoto Protocal calling for industrial nations to cut output of so-called greenhouse gases despite being one of the nations that negotiated the agreement at a summit in Kyoto (Japan) in 1997. The new administration of President Bush said the aim of reducing emissions of carbon dioxide and other gases by 5.2 percent from 1990 levels

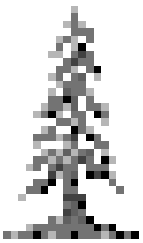
by 2010 would harm the U.S. economy and that it wanted more research about climate change. President Bush, after faulting the Kyoto treaty for excluding developing nations from its requirements, wants to cut U.S. aid for helping Third World countries combat global warming. While asking Congress for nearly $4 billion to address climate change, roughly the same as last year, Bush proposes reducing assistance to other countries by $41 million from last year's $165 million. Much of Bush's climate change budget amounts to shifting about $400 million toward areas such as burning coal more cleanly, insulating homes to use less energy and giving tax credits for electricity produced from wind and less-polluting agricultural waste.

CARBON SINKS WON'T SOLVE GLOBAL WARMING - REPORT

London, July 9 Reuters

Forests and farmlands cannot be relied on to soak up environmentally damaging greenhouse gases, and cuts in emissions are the only long-term way to reduce global warming, scientists said on Monday.

A new report by Britain's Royal Society said too little is known about how much farmlands and forests, so-called carbon sinks, can absorb carbon dioxide (CO2), the main greenhouse gas, from the atmosphere. In its report, the independent body of top scientists said better methods are needed to verify the impact of carbon sinks on global warming. Reducing the amount of CO2 from burning fossil fuels should be the main way to reduce global warming. "These carbon sinks are of rather limited size and also will only work for a relatively short duration, a few decades. That means they can't make a major contribution to reducing carbon emissions and solving the global warming problem," said Professor John Shepherd, an authour of the report. According to the report, carbon sinks and soil absorb about 40 percent of CO2 emissions and could soak up as much as 45 percent. It added that the maximum that could be absorbed would only be equivalent to a quarter of that needed by 2050 to prevent major rises in global temperature.



"Our view is that the argument is being diverted into what is really a rather unproductive area and people should get back to talking about carbon emission reductions at source by use of renewable (fuels) and whatever else they think is necessary," said Shepherd. The scientists also warned that in the future carbon sinks could become a source of CO2. They could release greenhouse gases, such as methane. "The primary benefit of land carbon sinks is that they can be effective immediately and provide a financial incentive for the preservation and sustainable use of forests and agriculture land," the report said. The long-term solution must be cuts in CO2 emissions through energy saving and replacing fossil fuels with renewable and nuclear energy. Reuters © 09/07/01

Crossword: Answers to the Spring Puzzle

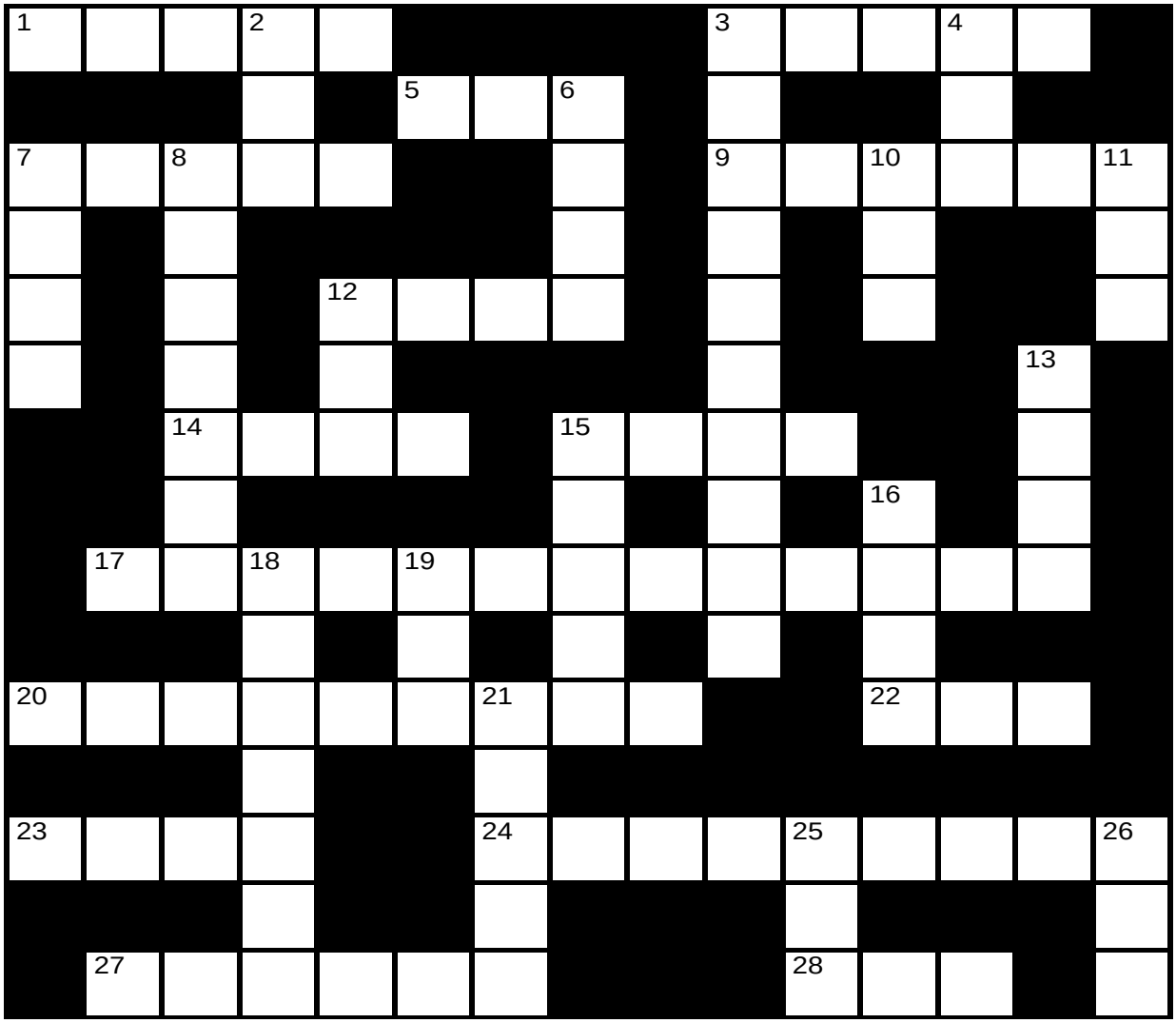
Across: 1 Frost, 3 Ocean, 5 Fog, 7 Metar, 9 Cirrus, 12 Fine, 14 Dawn, 15 Cool, 17 Precipitation, 20 Northerly, 22 Hot, 23 Blue, 24 Dustdevil, 27 Breeze, 28 Wet.

Down: 2 Sea, 3 Occasional, 4 Air, 6 Gale, 7 Mist, 8 Thunder, 10 Red, 11 Sky, 12 Few, 13 Rain, 15 Chill, 16 High, 18 Extreme, 19 Ice, 21 Ridge, 25 Dew, 26 Low.

Answers to the Winter (last edition) Puzzle.

Across: 1 Hot, 3 Drizzle, 4 West, 6 Ridge, 9 Calm, 10 Fog, 11 Snow, 12 Sky, 13 Overcast, 14 Red, 15 Few, 17 Depression, 19 Rain, 20 Gale, 22 High, 23 Cirrus, 24 Low.

Down: 1 Hail, 2 Clear, 3 Dusk, 4 Warm, 5 Lightning, 7 Dawn, 8 East, 9 Cloud, 11 Spring, 15 Fine, 16 Fresh, 18 Rust, 21 Autumn, 23 Col, 25 Wet.



Across

1 frozen lacework (5)
3 sailing ground (5)
5 below 1km. (3)
7 met aviation report (5)
9 hairy clouds (6)
12 able to see shadows or stars (4)
14 day's first light (4)
15 not cold, not warm (4)
17 wet part of water cycle (13)
20 a wind found west of a high (9)
22 some like it (3)
23 skylight colour (4)
24 a dirty spin (9)
27 moderate wind (6)
28 rain, drizzle, e.g. (3)

Down

2 wet and salty (3)
3 between few and many (10)
4 gaseous planetary envelope (3)
6 Force 8 (4)
7 over 1km (4)
8 the sound of lightning (7)
10 last colour to go (3)
11 dome above (3)
12 between isolated and scattered (3)
13 liquid hydrometers (4)
15 comes from cold wind (5)
16 pressure system noted for its dryness (4)
18 record breaking (7)
19 water below zero (3)
21 tongue of high (5)
25 droplets of dawn (3)
26meteorologic depression (3)

Answers are on page 45.

WHAT IS THE MET SOCIETY?

The Society is a group of people from around New Zealand (and overseas) who like to share their fascination in weather and its antics. The Society was inaugurated at a meeting held in Wellington on 11 October 1979. The objects of the Society are to encourage an interest in the atmosphere, weather, and climate, particularly as related to the New Zealand region.

What does the Society provide?

- **Access to a lively committee who are specially elected watchdogs for any contentious issue involving weather or climate.**
- **For members in the main centres: An e-group for communications plus organised meetings throughout the year on weather and climate topics.**
- **A quarterly newsletter full of members news and views plus descriptions of recent significant weather.**
- **An annual professional journal *Weather and Climate*, providing members access to the latest peer-reviewed thinking in the profession of meteorology. It is accepted internationally as the journal that gives recognition of the value of meteorological and climatological work done in New Zealand. It contains papers of interest to both professional and general readers. It also includes book reviews and explanations of the unusual. Members are invited to send in their own descriptions or photos.**
- **An annual conference.**
- **A web site** http://metsoc.rsnz.govt.nz/

Who are the Society members?

We are a mix of professionals and non-professionals.
We come from a broad range of backgrounds, including:

- **meteorologists, weather watchers and storm chasers**
- **climatologists, environmentalists and geographers**
- **hydrologists and ecologists**
- **sailors and divers**
- **trampers and climbers**
- **aviators and glider pilots**
- **agriculturists and aquaculturists**
- **astronomers and cloud-admirers**
- **economists and engineers**
- **professional weather forecasters**

MEMBERSHIP APPLICATION FORM

Anyone with an interest in the atmosphere, weather and climate of New Zealand may join us. We welcome applications from non-professionals and from those in disciplines related to the study of the atmosphere (oceanography, hydrology, etc.).

A brief description of the Society and a list of services are outlined on the other side of this page. If you wish to apply for membership, please complete the form below.

I wish to apply for membership of the Meteorological Society of New Zealand (Inc.)

1. Name and Address (include email):

2. My interest in meteorology is:

3. I am willing to have my name and location published in Society documents: YES NO

4. Payment (annual): Ordinary members..... $25.00
Institutional members $75.00
Overseas posting surcharge $15.00
Subscriptions are due on 1 August.
Our financial year is from 1 August to 31 July.

5. Signature:_____ Date:_____

6. Please return this form, and a cheque (made out to *Meteorological Society of N.Z.*) to

The Secretary
Meteorological Society of New Zealand
P.O. Box 6523, Te Aro
Wellington
NEW ZEALAND