

Ref. 033.428(2)

10 JAN 1962

GPH/DKE

The Secretary,
Special Committee on Oceanic Research,
34, Neuer Wall,
HAMBURG 36,
GERMANY

Dear Bohncke,

WGI : Carbon Dioxide in the Ocean and Atmosphere

When we discussed this group in Paris and Monaco it was felt it should consist of Bolin, Keeling, Erikson, Kanwisher, and Rotschi. Before we re-establish the group I would like to write to these people and to Sugawara.

I have the addresses of Kanwisher, Rotschi, and Sugawara and I have sent them letters. I do not have the addresses of Bolin, Keeling, and Erikson. Please find out their addresses and send the enclosed letters to them.

Yours sincerely,



(G.F. HUMPHREY)
President of SCOR

Enclosures

Letters (3)

Ref. 033.428 (1)
" (2) ✓

10 JAN 1962

GFH/DKE

The Secretary,
National Committee for Oceanic Research,
Pr-T Lomonosova 14, Kv. 492,
MOSCOW U.S.S.R.

Dear Professor Zenkevich,

SCOR WORKING GROUPS ON "RADIOACTIVITY IN THE
OCEAN" AND ON "CARBON DIOXIDE IN THE OCEAN
AND ATMOSPHERE"

It is probable that these two working groups will be formed again this year with new terms of reference and new members. I have already written to several people asking for general comments and for any specific suggestions for work.

I am sure that in your laboratories there are scientists working on these questions and I think it would be good to have a Soviet scientist on each working group. These scientists should be active workers who can give some of their time to correspondence and a meeting.

I would be glad if you would suggest names to me either before, or at, our next Executive meeting (? March).

Yours sincerely,

A

(G.F. HUMPHREY)
President of SCOR

THIS LETTER ALSO SENT TO - SEE BELOW

Ref. 033.428(2)
GPH/DKE

Dr K. Sugawara,
Institute of Chemistry,
Nagoya University,
NAGOYA JAPAN

Dear Dr Sugawara,

SCOR WORKING GROUP ON "CARBON DIOXIDE" IN
THE OCEAN AND ATMOSPHERE

When this working group was proposed in 1958 it had the following primary objectives -

Assay of present concentrations in ocean and atmosphere and monitoring changes; study of exchanges between ocean, atmosphere, and biosphere; use of carbon dioxide content and isotopic relationships to characterize water and air masses.

The recent SCOR meeting in Monaco decided that the status of each of its working groups should be examined with a view to providing, where required, new terms of reference and new membership. To assist SCOR to carry out this decision, I would be grateful for your suggestions for future activities.

Yours sincerely,



(G.F. HUMPHREY)
PRESIDENT OF SCOR

Dr J.W. Kanwisher,
Woods Hole Institute,
U.S.A.

Dr Bolin) Letters to these
Dr Keeling) people were sent
Dr Erikson) to Dr Bohnecke to
 / be forwarded by him

Dr K. Sugawara,
Institute of Chemistry,
Nagoya University,
Nagoya, Japan.

(Addresses not known)

Dr C Keeling

WOODS HOLE OCEANOGRAPHIC INSTITUTION
WOODS HOLE, MASSACHUSETTS

FILE 038.420 (A)

22 JAN 1962

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Dear G. F. Humphrey,
What is SCOR? As for CO₂, lots of people tried to plan other peoples research at the Helsinki meeting. To the best of my knowledge this - as usual - has not resulted in much. I guess Rakestraw should know as well as anyone since he ran the discussion. No one seemed to be interested in the really pertinent things such as an island southern hemisphere air CO₂ station to check the Hawaii yearly cycle. If you have good people who are

willing to do directed research - hardly likely - you
might put them on that.

It was a privilege to have Neil Brown
engineering competence in our midst for as long
as we did. Don't hesitate to report more of that
caliber.

Sincerely,

John Kanwisher

Ref. 033.428(2)
GFH/CV

January 22, 1962

Dr J.W. Kanwisher,
Woods Hole Oceanographic Institute,
Woods Hole,
MASS. U.S.A.

Dear John,

Many thanks for your prompt reply.

I could say that SCOR is ICSU's way of getting some scientists (? ex-~~students~~) together so that they can precipitate the carrying-out of more oceanic research. I could give you the reply that a government delegate to the recent Inter-governmental Oceanographic Commission made when he himself asked the same question, i.e. SCOR is what the office-bearers make it.

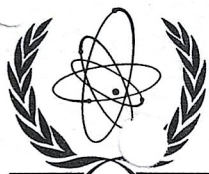
The present bane of the office-bearers is the miscellany of working-groups. These seem to be groups which tell other people what to do. I would like them to be groups of workers who tell SCOR what it should do so that they can do more or better work. Often the answer will be zero, but there may be a few things SCOR can do. You have already made a good suggestion - get a S. Hemisphere air CO₂ station going.

I shall keep you informed of SCOR's next steps on the group.

Yours sincerely,



(G.F. HUMPHREY)
President of SCOR



INTERNATIONAL ATOMIC ENERGY AGENCY
AGENCE INTERNATIONALE DE L'ENERGIE ATOMIQUE
МЕЖДУНАРОДНОЕ АГЕНТСТВО ПО АТОМНОЙ ЭНЕРГИИ
ORGANISMO INTERNACIONAL DE ENERGIA ATOMICA

VIENNA I, KAERNTNERRING, AUSTRIA
TELEPHONE: 52 45 25, CABLE: INATOM

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8 February 1962

Dear Dr. Humphrey:

Referring to your letter of 15 January, 1962, concerning the SCOR Working Group on "carbon dioxide" in the Ocean and the Atmosphere, of which I am a member, I should like to make the following comments pertaining to its future terms of reference.

(a) Recent years' research has shown that with appropriate instrumentation the increase of atmospheric carbon dioxide due to fossil combustion can be followed from year to year. However, the present monitoring stations for atmospheric carbon dioxide are too few and the geographical distribution poor.

(b) The distribution of total carbon dioxide and alkalinity in the sea is inadequately known. The Working Group should therefore also study available analytical techniques for the determination of these compounds and make recommendations as to the amount and geographical distribution of required data.

(c) The carbon dioxide pressure of surface water seems to be an extremely good indicator of vertical exchange processes near the sea surface. The Working Group should make recommendations as to the most suitable techniques to be employed and on the desired extent of investigation.

(d) Carbon-14 data on seawater samples have proved to be of great interest in the past but an adequate survey is still missing in large areas of the oceans. The Working Group should consider suitable sampling techniques and the proper distribution of sampling and make recommendations accordingly.

Considering these four points of future activities the terms of reference for the Working Group could be formulated as follows:

1. To examine the past and present work on monitoring atmospheric carbon dioxide with a view to assess the best techniques of monitoring and the geographical distribution of monitoring sites;
2. To examine available data on total carbon dioxide and alkalinity in the sea in order to assess the amount of information required in future and the best analytical techniques to be recommended.

Dr. G. Humphrey
President, C.S.I.R.O.
Box 21, Cronulla
Sydney, Australia

3. To examine available data on the carbon dioxide pressure in ocean surface water in order to assess their usefulness in the study of the vertical mixing in the upper layers of the sea and for the study of the geographical distribution of the rate of exchange between the atmosphere and the sea;

4. To examine available carbon-14 data on ocean water in order to assess their usefulness in oceanography and the future need for such work.

I feel that this more or less covers the field and although the terms of reference suggested may require some polishing they at least give specific directives for the work of the Working Group.

I may also add that arrangements should be made so that the Working Group can meet for at least four days per year. If the necessary funds are not made available it will be extremely difficult for the Working Group to carry out its work successfully.

Sincerely yours,



Dr. Erik Eriksson

cc: Dr. Charles Keeling
Inst. of Meteorology
Lindhagensgatan 124,
Stockholm, Sweden

Ref. 033.428(2)
GFH/DKE

15 FEB 1962

Dr E. Eriksson,
International Atomic Energy Agency,
Kaerntnerring,
VIENNA 1. AUSTRIA

Dear Dr Eriksson,

Thank you for your very helpful letter of
February 8, 1962.

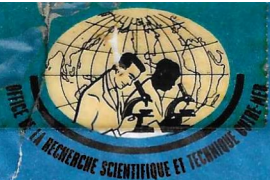
The SCOR Executive will meet in London on
April 16-18, 1962, and we shall consider the
future of the working group. I shall probably
call at IAEA just before then and may have the
opportunity to meet you.

I agree thoroughly that if SCOR expects the
group to work, there must be funds provided for
meeting. If the group has good terms of reference
I am sure we can get the necessary funds.

Yours sincerely,

W

(G.F. HUMPHREY)
President



Office de la Recherche Scientifique et Technique Outre-Mer

O. R. S. T. O. M.

INSTITUT FRANÇAIS D'OCÉANIE

Nouméa, le 28 Février 1962

NOUMÉA (NOUVELLE CALÉDONIE) - TÉL. 32.01

B. P. 4

ADR. TÉL. : I. F. O. NOUMÉA

ROT/es

H. ROTSCHE

à

Dr. G.F. HUMPHREY
Président of S.C.O.R.
C.S.I.R.O.
Box 21
CRONULLA-SYDNEY N.S.W.
Australie

FILE 033.428(2)
2 ^e MAR 1962
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Référence : Votre 033.428(2) GFH/DKE du 10 Janvier 1962.

Mon cher Dr. Humphrey,

J'ose espérer que vous ne m'en voudrez pas trop de ne pas avoir répondu plus tôt à votre lettre citée en référence, mais je désirais, avant de le faire, reprendre contact avec les vrais problèmes océanographiques et faire le point des travaux qu'il me sera possible d'entreprendre, dans le courant de cette année, sur le sujet du gaz carbonique. C'est maintenant chose faite.

Il me semble en premier examen, que les objectifs du "working group on carbon dioxide" du S.C.O.R. sont particulièrement ambitieux, mais tout aussi difficiles à atteindre, tout au moins dans l'état actuel de la recherche océanographique et compte tenu d'une certaine conception qui pousse les chercheurs à s'intéresser plus aux grands aspects de la dynamique des océans et à l'hydrologie la plus classique qu'à la chimie de l'eau de mer et à ses relations avec l'atmosphère et la biosphère.

D'autre part, s'il semble relativement aisé de suivre les variations de la teneur en gaz carbonique de l'atmosphère, il est beaucoup plus difficile de se livrer en mer à la même opération, avec une précision suffisante veux-je dire; je n'en veux pour preuve que la relative rareté des études systématiques sur la teneur en gaz carbonique du milieu marin.

Enfin, j'ai appris, au cours des recherches entreprises à Nouméa, que les méthodes dont nous disposons actuellement ne semblent pas particulièrement bien adaptées à l'emploi de la teneur en gaz carbonique pour caractériser les masses d'eau et pour étudier les échanges entre la mer et la biosphère par exemple; ces techniques n'étant en effet ni assez précises, ni assez fidèles.

En conséquence, il m'apparaît qu'en ce qui concerne la seule eau de mer et sa teneur en gaz carbonique, les recherches devraient porter sur :

1°) la mise au point de techniques assez sensibles pour permettre de suivre les variations de concentrations liées aux cycles diurnes et saisonniers de la photosynthèse; ces techniques doivent être utilisables sans perte de précision à bord d'un navire de dimensions modestes; deux lignes sont à suivre :

- application de la méthode d'Anderson et Robinson à l'emploi d'un pHmètre de haute précision du type Beckman modèle G.S.;
- adaptation de la méthode de Wattenberg aux conditions de travail en mer avec remplacement éventuel de la titration acidimétrique manuelle par une titration automatique avec un appareil du type titrateur Beckman modèle K.

2°) la généralisation à tous les océans, des observations systématiques sur la distribution du gaz carbonique dans la mer. Un double objectif est à atteindre :

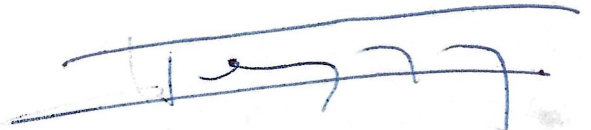
- a) caractérisation des principales masses océaniques par leur teneur en gaz carbonique au même titre que par la concentration des sels nutritifs ou de l'oxygène
- b) étude de la liaison entre l'activité photosynthétique et la teneur en gaz carbonique

Le premier peut être atteint dès maintenant, dans la mesure où le programme des croisières actuelles inclut la mesure du pH et de l'alcalinité par les techniques dont nous disposons déjà. Le second est tributaire de l'amélioration de nos moyens d'investigation.

Il va de soi que les données sur la distribution du gaz carbonique atmosphérique au-dessus des régions océaniques font tragiquement défaut et qu'il y aurait tout intérêt à lier les deux problèmes; néanmoins une campagne systématique d'échantillonnage dans l'atmosphère ne peut prendre sa signification qu'à partir du moment où existe un centre mondial d'exploitation des observations. Un tel organisme serait donc à mettre en place avant que ne soit engagée toute action ultérieure.

Enfin, pour ce qui est de l'utilisation des isotopes du carbone dans les problèmes de datage ou d'identification, il me semble que l'on devrait accorder beaucoup plus d'attention aux différentes sources possibles de radiocarbone; mais ce n'est bien entendu là qu'une opinion de non spécialiste.

J'espère que ces commentaires pourront vous être de quelque utilité et vous prie d'agréer, mon cher Dr. Humphrey, l'expression de mes sentiments dévoués.



Ref. 033.428(2)
GFH/DKE

15 - MAR 1962

Mr H. Rotschi,
Institut Francais D'Oceanie,
B.P. 4.,
NOUMEA NEW CALEDONIA

Dear Mr Rotschi,

I was very pleased to receive the detailed
comments in your letter of February 28.

The SCOR Executive will meet with the UNESCO
Office of Oceanography in London on April 16-18 and
we shall discuss the future activities and terms of
reference of the working group. I hope to write
to you in May and to tell you our thoughts.

Yours sincerely,



(G.F. HUMPHREY)
President

Ref:033.426(2)
GFH/CW

CIRCULAR MEMORANDUM

To: Dr J. Kanwisher, Woods Hole
Dr C. Keeling, Vienna
Mr H. Rotschi, Noumea

15 MAY 1962

SCOR WORKING GROUP ON "CO₂ IN THE OCEAN AND ATMOSPHERE"

The formation of a new working group on this subject was discussed briefly at the SCOR Executive-UNESCO Office of Oceanography meeting, at London, on April 16-18. No decisions were taken and the question will be discussed again at the next SCOR Executive Meeting which will be at Paris in September.


(G.F. HUMPHREY)
President

Ref. 033.428(2)
GPH/AM

Copy to Drs Bohnecke and
Wooster

26 OCT 1962

CIRCULAR MEMORANDUM

TO: Dr B. Bolin, Stockholm
Dr E. Eriksson, Vienna
Dr J.W. Kawisher, Woods Hole
Dr C. Keeling, Stockholm
Dr W. Rakestraw, La Jolla
Mr H. Rotschi, Noumea
Dr K. Sugawara, Nagoya

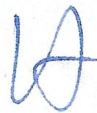
SCOR WORKING GROUP ON "CO₂ IN THE OCEAN AND ATMOSPHERE"

Further to our correspondence on the continuation of the above group, the SCOR Executive discussed the matter at its meetings in April and October.

It has been decided that, because of the request from the Intergovernmental Oceanographic Commission (Resolution 2 of the Second Session, September 1962) for SCOR to advise on a General Scientific Framework for the Comprehensive Study of the World Ocean, the working group on CO₂ should not be re-established.

SCOR is now consulting national committees about the Framework and intends to devote three days of its next full meeting (February, March or April 1963 in Canada or U.S.A.) to a discussion of the replies. Any activities concerning studies of CO₂ in the ocean can best be dealt with by working groups which might come from a consideration of the General Scientific Framework rather than by establishing special, limited groups.

Please accept the thanks of SCOR for your interest in the working-group.



(G. F. HUMPHREY)
President