

DEEP-SEA RESEARCH Part II

Deep-Sea Research II 46 (1999) 1-7

Preface



Gerold Siedler in his office at the Institut für Meereskunde, Kiel, ca. 1996 (Foto: I. Oelrichs)

Gerold Siedler has worked for more than 38 years as a marine scientist and also as an academic teacher in Physical Oceanography at the Institut für Meereskunde of the *Christian-Albrechts-Universität zu Kiel.* On 16 August 1998 he celebrated his 65th birthday. For many of his colleagues and friends it is hard to imagine that this date – or to be more precise the end of the summer semester 1998 – marks the beginning of his official retirement, in accordance with the statutes of the state of Schleswig-Holstein. All who know Gerold Siedler will agree that he is remarkably youthful and energetic, and certainly will continue doing important research and administration for many more years.

Gerold Siedler belongs to a small and distinguished group of individuals in the international community of oceanographers who have significantly influenced the course of marine science over the past 30 years. In 1960 he was asked by Professor Dietrich to strengthen the instrumental capabilities of the Institut für Meereskunde, and ever since he has devoted his professional skills and abilities to the progress of physical oceanography in many areas.

His professional positions have included appointments as Director of the Marine Physics Department (1969–1998), Acting Director of the Institut für Meereskunde (1976–1978) and Dean of the Faculty of Mathematics and Sciences of the *Christian-Albrechts-Universität zu Kiel* (1991–1992). A number of invitations has allowed him to take up numerous positions as visiting scientist in renowned laboratories in Woods Hole, Honolulu, Miami, Pasadena, Paris and Brest. In addition to his many teaching obligations in Kiel (from 1966), he has over the years been guest lecturer in Woods Hole, Trieste, Hamburg, Rio de Janeiro and Concepcion. He has chaired the advisory committees of over 80 Diplom and Ph.D. students, and also many *Habilitation* candidates. Gerold Siedler has literally been a teacher to a whole generation of graduate students in oceanography from Kiel.

He has spent a considerable portion of his working career as an observational oceanographer at sea. We have counted 28 cruises in which he has participated, mainly as chief scientist. These cruises were spread over all three oceans. His worldwide activities, paralleled by his professional success and organizational skills, turned him into a highly valued consultant on the German and international stages of marine science. Among the most distinguished tasks, to which he has devoted much of his time, were the chairmanship of the Commission of Oceanography of the Deutsche Forschungsgemeinschaft (1986-1995) and the presidency of the Scientific Committee on Oceanic Research (1983–1988). The number of additional committees on which he has served is too long to tabulate here. However, we want to emphasize his increasing efforts to strengthen the European component in the international marine science endeavour. Gerold Siedler greatly benefited from his time as visiting investigator in the US, but what appeared to be a one-way route until the mid-1970s today has become a true exchange process for scientists between the Old and the New World. To this Gerold Siedler made a major contribution. His Marine Physics Department at the Institut für Meereskunde has hosted numerous colleagues from many laboratories world-wide, thus fostering exchange of people and ideas.

Gerold Siedler has always been, or better still remains, actively involved in a substantial number of international oceanographic experiments. They belong to the geographically most extensive in earth science that have ever been performed. Among them are the Global Atmospheric Research Program (GARP) Atlantic Tropical Experiment (GATE) in 1974, its successor Joint Air-Sea-Interaction Project (JASIN) in 1978, and the unprecedented World Ocean Circulation Experiment (WOCE) since 1990. To chair the "International WOCE Scientific Conference" in Paris in 1988 was one of the biggest challenges he had to face during his career, due to enormous and unforeseen political pressures brought to bear at the time. How much satisfaction must he have felt ten years later that the 1998 WOCE Conference on Ocean and Climate in Halifax was such a resounding success, not least because of Gerold Siedler's decade-long involvement.

In the middle of his career, Gerold Siedler devoted quite a portion of his time to advisory boards and to the editing of oceanographic journals. Among these have been *Oceanologica Acta* and *Deep-Sea Research*. He has also worked in numerous German, European and American professional societies, e.g. he is a Charter Member of *The Oceanography Society*.

During the last few years he has payed special attention to the development of the European program CANIGO under the supervision of the European Commission. The project's aim is to understand the functioning of the marine system in the Canary-Azores-Gibraltar region of the Northeast Atlantic Ocean through comprehensive, interdisciplinary, basin-scale studies. From the day he retires officially in Kiel, Gerold Siedler plans to continue his perpetual effort in support of international co-operation in marine science from his new professional affiliation at the Instituto Canario de Ciencias Marinas in Las Palmas.

The scientific work of Gerold Siedler is outstanding. He has authored or coauthored over 80 refereed journal articles and books, or contributions to books. It is difficult to judge which of these publications had the strongest impact on the course of oceanography. However, a whole generation of German graduate students saw in Dietrich's et al. text book, *Allgemeine Meereskunde*, the basis of their studies in physical oceanography. Gerold Siedler is a co-author of this book.

In recognition of Gerold Siedler's tireless dedication and superb contributions to oceanography we have planned this special issue of *Deep-Sea Research*. Since his research interests have been very broad in scope – ranging from estuarine discharge to basinwide oceanic circulation – it was not an easy task to focus on a single topic. Geographically, however, his research has been largely directed at the Atlantic Ocean (with a few exceptions in the Indian and Pacific Oceans in the early and recent years of his scientific career). With this in mind, we solicited contributions from those of his colleagues and former students who have an interest in the regional and larger, basin scale of the Atlantic Ocean. We hope that together these will provide new views of the circulation of a well-sampled ocean. Our project was initiated during the general assembly of the European Geophysical Society in the Hague in the spring of 1996 which – characteristically – was substantially organized and guided by Gerold Siedler.

We discussed our proposed project with John Milliman, chief editor of *Deep-Sea Research*, Part II, and an old friend Gerold Siedler's. He was highly enthusiastic about a Gerold Siedler *Festschrift* as an individual issue of this journal. We have aimed at a respectable collection of original scientific manuscripts preceded by Gerold Siedler's full bibliography and some remarks on his career. Our heartfelt thanks go to all authors for their manuscripts and patience. In particular we want to acknowledge the self-sacrificing work of Connie Schuster as an editorial assistant. She took on this huge extra load to act as focal point for the exchange of manuscripts and letters and to do this with the utmost discretion. This was over and above Gerold Siedler's regular correspondence and her normal management tasks. Our thanks also include over forty peers who have reviewed the submitted papers with great diligence. The *Festschrift* was planned as a surprise. We wish that its content will be scientifically well-received and will adequately express the admiration and respect of all his colleagues for the honouree.

1 September 1998

Walter Zenk Kiel Ray Peterson San Diego Johann Lutjeharms Cape Town

Works of Gerold Siedler

- Siedler, G., 1961. Untersuchungen über die Bedeutung bestimmter Tonfrequenzbänder für die Verständlichkeit synthetischer Sprache und über Änderungen der Sprachverständlichkeit bei Kanalvertauschungen. Zeitschrift für Angewandte Physik 13, 275–283.
- Siedler, G., 1961. Über die kurzfristige Veränderlichkeit von Temperatur- und Salzgehaltsschichtung in der östlichen und mittleren Ostsee im Sommer 1960. Kieler Meeresforschungen 17, 148–153.
- Krause, G., Siedler, G., 1962. Zur kontinuierlichen Bestimmung der Tiefenlage von Schleppgeräten im Meer. Kieler Meeresforschungen 18, 29–33.
- Siedler, G., 1962. Die Zugbeanspruchung des Einleiterkabels bei Bathysondenmessungen in der Tiefsee (Technischer Bericht). Kieler Meeresforschungen 18, 34–35.
- Dietrich, G., Siedler, G., 1963. Ein neuer Dauerstrommesser. Kieler Meeresforschungen 19, 3-7.
- Siedler, G., 1963. On the in-situ measurement of temperature and electrical conductivity of sea-water. Deep-Sea Research 10, 269–277.
- Holzkamm, F., Krause, G., Siedler, G., 1964. On the processes of renewal of the North Atlantic deep water in the Irminger Sea. Deep-Sea Research 11, 881–890.
- Krause, G., Siedler, G., 1964. Ein System zur kontinuierlichen Messung physikalischer Größen im Meere. Kieler Meeresforschungen 20, 130–135.
- Siedler, G., 1964. Eine Methode zur langzeitigen Messung der Temperatur in den Randgebieten der Ozeane. Kieler Meeresforschungen 20, 124–129.
- Siedler, G., 1965. Schichtungs- und Bewegungsverhältnisse am Südausgang des Roten Meeres. Habilitationsschrift, Univ. Kiel, 150 p.
- Siedler, G., 1966. Zum Mechanismus des Wasseraustausches zwischen dem Roten Meer und dem Golf von Aden. Zeitschrift der Geophysik 32, Sonderheft, 335–339.
- Siedler, G., 1966. Die Bestimmung der Zunahme der elektrischen Leitfähigkeit von Seewasser bei wachsendem Druck mit Hilfe eines Nomogramm. Kieler Meeresforschungen 22, 39–41.
- Siedler, G., 1968. Schichtungs- und Bewegungsverhältnisse am Südausgang des Roten Meeres. Meteor Forschungsergebnisse, A 4, 1–76.
- Siedler, G., 1968. Die Häufigkeitsverteilung von Wasserarten im Ausstrombereich von Meeresstraßen. Kieler Meeresforschungen 24, 59–65.
- Siedler, G., 1968. Physikalische Methoden. In: Schlieper, C. (Ed.), Methoden der Meeresbiologischen Forschung. Gustav-Fischer Verlag, Jena, pp. 32–47.
- Siedler, G., 1969. General circulation of water masses in the Red Sea. In: Degens, E.T., Ross, D.A. (Eds.), Hot Brines and Recent Heavy Metal Deposits in the Red Sea. Springer, New York, pp. 131–137.
- Siedler, G., 1969. On the fine structure of density and current distribution and its shorttime variations in different areas. In: Sears, M. (Ed.), Progress in Oceanography 5, 81–94.
- Siedler, G., 1970. Feinstruktur der Wasserschichtung im Meer. In: Dietrich, G. (Ed.), Erforschung des Meeres. Umschau Verlag, Frankfurt/Main, pp. 53–64.
- Siedler, G., Grasshoff, G., 1970. Tiefwasser-Verankerungssysteme des Instituts für Meereskunde Kiel. Kieler Meeresforschungen 26, 21–42.
- Siedler, G., 1971. Vertical coherence of short-periodic current variations. Deep-Sea Research 18, 179–191. Siedler, G., 1971. Feinstruktur der Wasserschichtung im Meer. Umschau 71, 152–156.

- Siedler, G., 1972. Nordost-Atlantik-Expedition 1971. Meteor Forschungsergebnisse, A 10, 79-95.
- Siedler, G., Zenk, W., 1973. Variability of the thermohaline staircase. Nature 244, 11–12.
- Siedler, G., 1973. Rotes Meer, Mittelländisches Meer. In: Meyers Kontinente und Meere, Bibliographisches Institut, Mannheim, pp. 308–309, pp. 446–447.
- Siedler, G., Hatje, G., 1974. Temperatur, Salzgehalt und Dichte. In: Magaard, L., Rheinheimer, G. (Eds.), Meereskunde der Ostsee. Springer, Berlin, pp. 46–60.
- Müller, T.J., Schott, F.A., Siedler, G., Koltermann, K.P., 1974. Observations of overflow on the Iceland Faeroe Ridge. Meteor Forschungsergebnisse, A 15, 49–55.
- Siedler, G., 1974. Observations of internal wave coherence in the deep ocean. Deep-Sea Research 21, 587-610.
- Siedler, G., 1974. The fine-structure contamination of vertical velocity spectra in the deep ocean. Deep-Sea Research 21, 37–46.
- Siedler, G., Seibold, E., 1974. Currents related to sediment transport at the Ibero Morroccan Continental Shelf. Meteor Forschungsergebnisse, A 14, 1–12.
- Dietrich, G., Kalle, K., Krauss, W., Siedler, G., 1975. Allgemeine Meereskunde. Eine Einführung in die Ozeanographie. 3rd revised ed. Gebr. Borntraeger, Berlin/Stuttgart, 593 pp.
- Meincke, J., Siedler, G., Zenk, W., 1975. Some current observations near the continental slope off Portugal. Meteor Forschungsergebnisse, A 16, 15–22.
- Siedler, G., 1975. Das ozeanische Unterprogramm (GATE). Promet 5, 28-32.
- Müller, P., Siedler, G., 1976. Consistency relations for internal waves. Deep-Sea Research 23, 613-628.
- Perkins, H., Siedler, G., 1976. Estimation of current and temperature coherence in the Norwegian Sea. Meteor Forschungsergebnisse, A 18, 13–22.
- Käse, R.H., Peters, H., Siedler, G., Zenk, W., 1978. A compilation of current, temperature and conductivity data from moorings F1 and F2 in the GATE-C-Area. Meteor Forschungsergebnisse, A 20, 13–48.
- Käse, R.H., Siedler, G., 1979. Internal wave kinematics in the upper tropical Atlantic. Deep-Sea Research. 26A, (GATE Suppl) 161–89.
- Siedler, G., Woods, J.D., 1979. Introduction to a collection of papers on GATE oceanography and surface layer meteorology. Deep-Sea Research 26A (GATE-Suppl), 1–8.
- Siedler, G., Bröcker, R., 1980. Bibliographie Günter Dietrich. Meteor Forschungsergebnisse, A 21, 71-74.
- Siedler, G., Zenk, W., 1980. JASIN 1978. Field activities on the research vessels Meteor, Planet and Poseidon and the research aircraft D-CMET Meteor Forschungsergebnisse, A 21, 25–48.
- Wittstock, R.-R., Siedler, G., 1980. On the determination of vertical velocities in the tropical Atlantic Ocean. Meteor Forschungsergebnisse, A 21, 49–56.
- Dietrich G., Kalle, K., Krauss, W., Siedler, G., In: Roll, H.U., Roll, S. (Eds.), 1980. General Oceanography. 2nd revised ed. Wiley, New York, 626 pp.
- Siedler, G., 1980. Some implications of GATE results for Saharan dust transports across the Atlantic. In: Sarnthein, J., Seibold, S., Rognon, P. (Eds.), Sahara and Surrounding Seas, Sediments and Climatic Changes. A.A. Balkema, Rotterdam, pp. 21–30.
- Siedler, G., 1981. In Memoriam Klaus Grasshoff. Meteor Forschungsergebnisse, A/B 23, 1-4.
- Käse, R.H., Siedler, G., 1982. Meandering of the subtropical front south-east of the Azores. Nature 300, 245–246.
- Siedler, G., Philander, G., 1982. Physics of the upper tropical ocean. GATE Monograph. GARP Publication Series No. 25, WMO Geneva, pp. 219–235.
- Siedler, G., 1983. Tropical and equatorial regions. In: Robinson, R.A. (Ed.), Eddies in Marine Science. Springer, New York, pp. 181–199.
- Grabemann, I., Krause, G., Siedler, G., 1983. Langzeitige Änderungen des Salzgehaltes in der Unterweser. Deutsche Hydrographische Zeitschrift 36, 61–77.
- Käse, R.H., Knoll, M., Siedler, G., Zenk, W., 1983. Moored current meter data from JASIN 1978. Meteor Forschungsergebnisse, A/B 24, 5–24.
- Siedler, G., Stramma, L., 1983. The applicability of the T/S method to geopotential anomaly computations in the Northeast Atlantic. Oceanologica Acta 6, 167–172.
- Siedler, G., 1985. Physikalische Ozeanographie. In: Forschungsschiff Meteor 1964–1985, Deutsche Forschungsgemeinschaft, Deutsches Hydrographisches Institut, Hamburg, pp. 69–70.

- Dick, G., Siedler, G., 1985. Barotropic tides in the Northeast Atlantic inferred from moored current meter data. Deutsche Hydrographische Zeitschrift 38, 7–22.
- Siedler, G., Zenk, W., Emery, W.J., 1985. Strong-current events related to a subtropical front in the Northeast Atlantic. Journal of Physical Oceanography 15, 885–897.
- Siedler, G., Peters, H., 1986. Properties of sea water, Physical properties (general). In: Sündermann, J. (Ed.), Oceanography, LANDOLT-BÖRNSTEIN, Numerical Data and Functional Relationships in Science and Technology, New Series, V/3, pp. 233–264.
- Finke, M., Siedler, G., 1986. Drag coefficients of oceanographic mooring components. Journal of Atmospheric and Oceanic Technology 3, 255–264.
- Thiele, G., Roether, W., Schlosser, P., Kuntz, R., Siedler, G., Stramma, L., 1986. Baroclinic flow and transient-tracer fields in the Canary Cape-Verde Basin. Journal of Physical Oceanography 16, 814–826.
- Siedler, G., Kuhl, A., Zenk, W., 1987. The Madeira Mode Water. Journal of Physical Oceanography 17, 1561–1570.
- Bauer, E., Siedler, G., 1988. The relative contributions of advection and isopycnal and diapycnal mixing below the subtropical salinity maximum. Deep-Sea Research 35, 811–838.
- Stramma, L., Siedler, G., 1988. Seasonal changes in the North Atlantic subtropical gyre. Journal of Geophysical Research 93, 8111–8118.
- Siedler, G., 1989. Konstantin Nikolaevich Fedorov. Deep-Sea Research 36, 647.
- Ikeda, Y., Siedler, G., Zwierz, M., 1989. On the variability of Southern Ocean front locations between Southern Brazil and the Antarctic Peninsula. Journal of Geophysical Research, Oceans 94, 4757–4762.
- Klein, B., Siedler, G., 1989. On the origin of the Azores Current. Journal of Geophysical Research 94, 6159–6168.
- Schröder M., Siedler, G., 1989. Turbulent momentum and salt transport in the mixing zone of the Elbe estuary. Estuarine, Coastal and Shelf Science 28, 615–638.
- Siedler, G., Paul, U., 1991. Barotropic and baroclinic tidal currents in the eastern basins of the North Atlantic. Journal of Geophysical Research 96, 22 259–22 271.
- Müller, T.J., Siedler, G., 1992. Multi-year current time series in the eastern North Atlantic Ocean. Journal of Marine Research 50, 63–98.
- Siedler, G., Zangenberg, N., Onken, R., Morliere, A., 1992. Seasonal Changes in the Tropical Atlantic Circulation: Observation and Simulation of the Guinea Dome. Journal of Geophysical Research 97, 703–715.
- Speer, K.G., Zenk, W., Siedler, G., Pätzold, J., Heidland, C., 1992. First resolution of bottom water flow through the Hunter Channel in the South Atlantic. Earth and Planetary Science Letters 113, 287–292.
- Siedler G., Finke, M., 1993. Long-period transport changes in the eastern North Atlantic and their simulation by propagating waves. Journal of Geophysical Research 98, 2393–2406.
- Zlotnicki, V., Siedler, G., Klein, B., 1993. Can the weak surface currents of the Cape Verde Frontal Zone be measured with altimetry? Journal of Geophysical Research 98, 2485–2493.
- Rossby, T., Siedler, G., Zenk, W., 1995. The Volunteer Observing Ship and Future Ocean Monitoring. Bulletin of the American Meteorological Society 76, 5–11.
- Klein, B., Siedler, G., 1995. Isopycnal and diapycnal mixing at the Cape Verde Frontal Zone. Journal of Physical Oceanography 25, 1771–1787.
- Klein, B., Molinari, R.L., Müller, T.J., Siedler, G., 1995. A transatlantic section at 14.5N: Meridional volume and heat fluxes. Journal of Marine Research 53, 929–957.
- Speer, K.G., Siedler, G., Talley, L., 1995. The Namib Col Current. Deep-Sea Research I 42, 1933–1950.
- Hogg, N.G., B. Owens, W., Siedler, G., Zenk, W., 1996. Circulation in the Deep Brazil Basin. In: Wefer, G., Berger, W.H., Siedler, G., Webb, D.J. (Eds.), The South Atlantic: Present and Past Circulation. Springer, Berlin, pp. 249–260.
- Pätzold, J., Heidland, K., Zenk, W., Siedler, G., 1996. On Bathymetry of the Hunter Channel. In: Wefer, G., Berger, W.H., Siedler, G., Webb, D.J. (Eds.), The South Atlantic: Present and Past Circulation. Springer, Berlin, pp. 355–361.
- Speer, K.G., Holfort, J., Reynaud, T., Siedler, G., 1996. South Atlantic heat transport at 11 S. In: Wefer, G., Berger, W.H., Siedler, G., Webb, D.J. (Eds.), The South Atlantic: Present and Past Circulation. Springer, Berlin, pp. 105–120.

- Siedler, G., Müller, T.J., Onken, R., Arhan, M., Mercier, H., King, B.A., Saunders, P.M., 1996. The zonal WOCE sections in the South Atlantic. In: Wefer, G., Berger, W.H., Siedler, G., Webb, D.J. (Eds.), The South Atlantic: Present and Past Circulation. Springer, Berlin, pp. 83–104.
- Siedler, G., Onken, R., 1996. Eastern Recirculation. In: Krauss, W. (Ed.), The Warmwatersphere of the North Atlantic Ocean. Gebrüder Borntraeger, Berlin, Chapter 11, pp. 339–364.
- Wefer, G., Berger, W.H., Siedler, G., Webb, D.J. (Eds.), 1996. The South Atlantic: Present and Past Circulation. Springer, Berlin, 644 p.
- Siedler G., Zenk, W., 1997. Physikalische Ozeanographie. In Raith, W. (Ed.), Bergmann-Schaefer, Lehrbuch der Experimentalphysik, Band 7, Erde und Planeten. Chapter 2. de Gruyter, Berlin, pp. 53–130.
- Zangenberg, N., Siedler, G., 1998. Path of the North Atlantic Deep Water in the Brazil Basin. Journal of Geophysical Research 103, 5419–5428.
- Hogg, N., Siedler, G., Zenk, W., 1999. Circulation and Variability at the Southern Boundary of the Brazil Basin. Journal of Physical Oceanography, in press.
- Erasmi, W., Siedler, G., Onken, R., 1998. Energy conversion in the Cape Verde Frontal Zone. Journal of Geophysical Research, 103, 010, 21469–21479.
- Holfort J., Johnson, K.M., Putzka, A., Schneider, B., Siedler, G., Wallace, D.W.R., 1998. The meridional CO₂ transport in the South Atlantic Ocean. Global Chemical Biogeochemical Cycles 12, 479–499.

Status: June 1998