

# PROGRAM of the

**4TH SATELLITE SOIL MOISTURE VALIDATION**

**AND APPLICATION WORKSHOP**

**and the**

**CCI SOIL MOISTURE USER WORKSHOP**

18 - 20 September 2017, Vienna, Austria

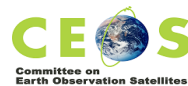
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## ORGANSATION:

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08:00 | REGISTRATION START

09:00 TO 10:30 | ORAL SESSION 1: CCI Data Characteristics and Validation Chair: W. WAGNER

09:00 Welcome & Logistics; Seed Questions for Feedback | W. DORIGO

09:10 The CCI SM Product ... Did you know that ... | R. KIDD, E. HAAS, W. DORIGO

09:30 ESA CCI Soil moisture: Recent improvements of the soil moisture retrievals from passive microwave sensors | R. VAN DER SCHALIE, R. DE JEU, W. DORIGO

09:45 ESA CCI Soil moisture: Recent improvements of the soil moisture retrievals from active microwave sensors | S. HAHN, M. VREUGDENHIL, T. MELZER, W. WAGNER

10:00 ESA CCI Soil Moisture - from science to operations | W. DORIGO, A. GRUBER, C. PAULIK, R. van der SCHALIE, R. PARINUSSA, C. REIMER, D. CHUNG, M. ERTL, R. DE JEU, R. KIDD, W. WAGNER

10:15 Homogeneity testing of the global ESA CCI multi-satellite soil moisture climate data record | W. PREIMESBERGER, C. SU, A. GRUBER, W. DORIGO

10:30 TO 11:00 | COFFEE BREAK

11:00 TO 12:30 | ORAL SESSION 2: CCI for Advancing Earth System Sciences Chair: W. DORIGO

11:00 Diagnosing agricultural drought from 1980 to 2010 with the ESA CCI soil moisture data | M. ZAMPIERI, L. SEGUINI, F. DENTENER, A. TORETI

11:15 Leveraging Long-term, Remotely-Sensed Soil Moisture Datasets for Optimal Averaging of Ensemble Land Surface Model Predictions | W. CROW

11:30 A drought event composite analysis using satellite remote-sensing based soil moisture N. NICOLAI-SHAW, J. ZSCHEISCHLER, M. HIRSCHI, L. GUDMUNDSSON, S. I. SENEVIRATNE

11:45 Interannual variability of the satellite observed and WRF modeled soil moisture in connection with dust events | M. HUANG, G. CARMICHAEL, D. TONG

12:00 Long-term ESA CCI soil moisture derived rainfall product through SM2RAIN L. CIABATTA, C. MASSARI, S. CAMICI, L. BROCCA, A. GRUBER, C. REIMER, S. HAHN, C. PAULIK, W. DORIGO, W. WAGNER

12:15 Towards cross-cutting land ECV consistency assessment through data assimilation J.-C. CALVET, D. LEROUX, C. ALBERGEL, A. BARBU, S. MUNIER, C. MEUREY

12:30 TO 13:30 | LUNCH

**13:30 TO 15:00 | ORAL SESSION 3: Potential Improvements**

Chair: R. DE JEU

- 13:30** Assessing the potential of using a soil moisture climatology based on L-band passive microwave observations for the ESA CCI Soil Moisture | M. PILES, R. VAN DER SCHALIE, A. GRUBER, R. PARINUSSA, R. DE JEU, W. DORIGO
- 13:45** Evaluation of 14 years of SMOS and SMOS-like soil moisture against the ESA CCI dataset | N. RODRIGUEZ-FERNANDEZ, B. CLUZET, A. MIALON, A. AL BITAR, Y. KERR, A. AL YAARI, J.-P. WIGNERON
- 14:00** Towards creating a ESA CCI soil moisture root-zone product? | J. BLYVERKET, P. HAMER, W. LAHOZ
- 14:15** Metop ASCAT vegetation parameters estimated from morning and evening orbit overpass and their impact on estimated soil moisture | S. STEELE-DUNNE, S. HAHN, W. WAGNER
- 14:30** The Compounding Effects of Sub-Surface Features in Soil Moisture Retrievals with Radar | K. MORRISON, S. THOMAS, W. WAGNER
- 14:45** From METOP ASCAT to METOP-SG SCA: Science Needs over Land | W. WAGNER, S. HAHN, S. ELEFANTE, M. VREUGDENH

**15:00 TO 15:30 | COFFEE BREAK****15:30 TO 16:30 | DISCUSSION: What are the priorities for soil moisture climate data services?**

Chair: R. KIDD

**16:30 TO 17:00 | SHORT PRESENTATIONS OF POSTERS ON DISPLAY IN POSTER SESSION I**

Chair: M. VREUGDENHIL

- POSTER 1** Comparison of European Space Agency's (ESA) soil moisture and NDVI trends in monthly scale (Case study: Iran) | E. FAKHARIZADESHIRAZI, A. A. SABZIPARVAR, S. SODOUDI, A. SHIRVANI
- POSTER 2** Evaluating Soil Moisture from Space in Central Minnesota combining SMAP-SMOS Satellites and Land Surface Model. | F. LAHOUD, J. NIEBER, D. CANELON
- POSTER 3** Remote Sensing of Soil Moisture in a Forested Peat Wetland in Virginia and North Carolina, USA | L. GUTENBERG, J. QU, J. KIM, Z. LU, X. HAO, C. XU, D. HOGAN, Z. ZHU, G. SPEIRAN
- POSTER 4** Effects of the mesoscale circulation on soil moisture over Kuwait | H. ALSARRAF, H. ALJASSAR
- POSTER 5** Soil Moisture influence in Desert Locust development | D. GOMEZ, C. CASANOVA, P. SALVADOR, J. SANZ, M. PILES, M. VALL-LLOSSERA, M. GARCI
- POSTER 6** The Implementation and Evaluation of a Particle Filter for Assimilation of Soil Moisture Observations | J. BLYVERKET, Å. BAKKETUN, P. HAMER, C. ALBERGEL, W. LAHOZ
- POSTER 7** Estimating irrigated cropland from satellite and model soil moisture data over the contiguous US | F. ZAUSSINGER, W. DORIGO, A. GRUBER
- POSTER 8** Detecting Soil Moisture by Combining MODIS/Landsat and In-situ Measurements Over Cropland of Iowa State, USA | C. XU, J. QU, X. HAO
- POSTER 9** Tibet-Obs and its Supersite for L-band Passive Microwave Measurements for Research and Operational Applications | Z. (BOB) SU, Y. ZENG, R. van der VELDE, J. WEN, X. WANG, D. ZHENG, S. LV, L. DENTE, X. CHEN, Y. MA, P. FERRAZZOLI, M. SCHWANK

**17:00 TO 19:00 | POSTER SESSION I & ICE BREAKER**

**09:00 TO 10:35 | ORAL SESSION 1: Passive Microwave Sensing**

Chair: T. JACKSON &amp; Y. KERR

09:00 Welcome & Logistics | W. WAGNER

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09:05 ESA's Soil Moisture and Ocean Salinity Mission – Status and mission performance over land | S. MECKLENBURG, M. DRUSCH, Y. KERR, M. MARTIN-NEIRA, R. SABIA

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09:20 The SMOS soil moisture validation and intercomparison approach and results | Y. KERR, J.-P. WIGNERON, B. MOLERO-RODENAS, R. FERNANDEZ-MORAN, A. MIALON, A. AL-YAARI, A. MAHMOODI, S. BIRCHER, N. RODRIGUEZ-FERNANDEZ, P. RICHAUME, A. AL BITAR, F.S CABOT

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09:35 Inter-calibration of low frequency brightness temperature measurements for a long-term uniform soil moisture record | M. BURGIN, A. COLLIANDER, C.-S. CHAE, E. DINNAT, M.COSH, Y. GAO, J. WALKER

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09:50 Integrating SMOS and SMAP observations | R. BINDLISH, T. JACKSON, S. CHAN, A. COLLIAN-  
DER, Y. KERR

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10:05 SMOS-IC: an alternative SMOS soil moisture and vegetation optical depth product | J.-P. WIGNERON, A. AL-YAARI, R. FERNANDEZ, A. MIALON, A. MAHMOODI, A. AL-BITAR, N. RODRIGUEZ, G. DE LANNOY, Y. KERR

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10:20 Soil moisture estimation from L-band active and passive microwave observations acquired by Aquarius over the Tibetan Plateau | Q. WANG, R. VAN DER VELDE, B. SU

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**10:35 TO 11:00 | COFFEE BREAK****11:00 TO 12:30 | ORAL SESSION 2: Active Microwave Sensing**

Chair: S. STEELE-DUNNE

11:00 High resolution soil moisture content from Sentinel-1 data | F. MATTIA, A. BALENZANO, G. SATALINO, F. LOVERGINE, A. LOEW, J. PENG, U. WEGMULLER, M. SANTORO, O. CARTUS, K. DABROWSKA-ZIELINSKA, J. MUSIAL, M. W. J. DAVIDSON

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11:15 Combining SMAP and Sentinel-1 data into a prototype ANN algorithm for soil moisture monitoring | E. SANTI, S. PALOSCIA, S. PETTINATO, L. BROCCA, L. CIABATTA

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11:30 Development and Algorithm Updates of the SMAP Resolution-Enhanced Passive Soil Moisture Product | S. CHAN, R. BINDLISH, P. O'NEILL, T. JACKSON, A. COLLIANDER, F. CHEN

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11:45 High-Resolution Enhanced Product based on SMAP Active-Passive Approach using Sentinel 1A & 1B SAR Data | N. DAS, D. ENTEKHABI, S. KIM, S. DUNBAR, S. YUEH, A. COLLIANDER

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12:00 Integration of SAR multi-frequency and optical data for the retrieval of soil moisture and vegetation water content | A. PADOVANO, F. GREIFENEDER, R. COLOMBO, G. CUOZZO, C. NOTARNICOLA

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12:15 How well the effects of vegetation and roughness were corrected for soil moisture retrieval using L-band radar data? | S. KIM, H. HUANG, T. LIAO

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**12:30 TO 13:30 | LUNCH**

**13:30 TO 15:00 | ORAL SESSION 3: In situ Network & Validation**

Chair: J. QU &amp; D. HEMMENT

- 13:30** Ongoing research at the Marena Oklahoma In Situ Sensor Testbed (MOISST) | [M. COSH, T. OCHSNER](#)
- 13:45** RSMN: 4 Years of In-Situ & Satellite Soil Moisture Observations in Romania | [A. DIAMANDI, E.A. MATEESCU, O. NICOLA, E. LUCA, R. CHIRITESCU](#)
- 14:00** Spatial and temporal variability of soil moisture: 6 years survey of SMOS data and in-situ soil moisture measurements in Poland | [M. LUKOWSKI, W. MARCZEWSKI, B. USOWICZ, J. USOWICZ, J. SŁOŃMIŃSKI, E. ROJEK, R. SZLĄZAK, L. GLUBA, J. SAGAN](#)
- 14:15** Cross-comparison of independent high-resolution soil moisture products across an agricultural landscape in south-eastern Australia | [C. RÜDIGER, A. MONERRIS, D. MCJANNET, L. RENZULLO, M. VREUGDENHIL, W. WAGNER](#)
- 14:30** Sentinel-1 Surface Soil Moisture: Comparison against an optimized Metop ASCAT soil moisture product and in-situ data in Lower Austria | [I. PFEIL, S. HAHN, B. BAUER-MARSCHALLINGER, S. HOCHSTÖGER, M. VREUGDENHIL, W. WAGNER](#)
- 14:45** Dense groundwater networks as an unexplored validation tool for satellite soil moisture | [R. DE JEU, A. DE NIJS, R. van der SCHALIE, R. PARINUSSA](#)

**15:00 TO 15:30 | COFFEE BREAK****15:30 TO 16:00 | SHORT PRESENTATIONS OF POSTERS ON DISPLAY IN POSTER SESSION II**

Chair: C. RÜDIGER

- POSTER 1** Integrating SAR and optical data for producing high spatial resolution soil moisture maps. An indirect validation of the product via data assimilation techniques | [L. CENCI, L. PULVIRENTI, G. BONI, G. SQUICCIARINO, S. GABELLANI, N. PIERDICCA, M. CHINI, P. MATGEN, M. BORDONI, M. - G. PERSICILLO, C. MEISINA](#)
- POSTER 2** Soil moisture estimation from SMAP polarimetric radar data with AQUARIUS derived regression coefficients | [M. BURGİN, J. VAN ZYL](#)
- POSTER 3** The study of the observation operator of simplified extended Kalman filter in the SL-AV global medium-range weather forecast model | [S. MAKHNORYLOVA, M. TOLSTYKH](#)
- POSTER 4** Global soil moisture monitoring with Sentinel-1: required data processing and analysis capabilities | [V. NAEIMI, S. CAO, C. PAULIK, B. BAUER-MARSCHALLINGER, A. DOSTALOVA, S. ELEFANTE, S.SCHAUFLE, D. B. NGUYEN, S. HOCHSTOEGER, I. ALI, T. LE, M. VREUGDENHIL, W. WAGNER](#)
- POSTER 5** 1 km Soil Moisture from Sentinel-1 and ASCAT: Evolutions Activities within the Copernicus Global Land Services | [B. BAUER-MARSCHALLINGER, C. PAULIK, S. HOCHSTÖGER, V. NAEIMI, S. CAO, W. WAGNER](#)
- POSTER 6** Recent Developments of the International Soil Moisture Network | [E. HEER, A. XAVER, R. MESSNER, W. DORIGO](#)
- POSTER 7** ISMN based validation of Sentinel-1 soil moisture estimations | [F. GREIFENEDER, C. NOTARNICOLA, W. WAGNER](#)
- POSTER 8** Validation of the SMOS-BEC products in different networks | [L. ROSSATO, M. VALL-LLOSERA, A. CAMPS, M. PILES, G. PORTAL, D. CHAPARRO, R. ALVALÁ](#)
- POSTER 9** Upscaling of ground measured surface soil moisture using Sentinel and Landsat data | [D. ZHANG, J. J QU, L. MENG](#)
- POSTER 10** An Evaluation of SMAP Soil Moisture Products over Cold and Arid Regions Using Distributed Observation Network Data | [C. MA, S. WANG, R. JIN, X. LI](#)
- POSTER 11** An intercomparison of soil moisture derived from SMAP and SMOS over eight sites in the Northeast Brazil | [F. PAREDES TREJO, H. BARBOSA ALVES](#)
- POSTER 12** The contribution of Citizens' Observatories to validation of satellite-retrieved soil moisture products | [D. HEMMENT, C. BUONTEMPO, A.A XAVER, E. DOBOS, C. PELLOQUIN, W. WAGNER, M. KHAWAJA, R. NEILSON, R. SKALSKY, M. WOODS, A. COBLEY, D. LONG](#)

**16:00 TO 17:30 | POSTER SESSION II****18:30 TO 22:00 | CONFERENCE DINNER**

**09:00 TO 10:30 | ORAL SESSION 4: Data Assimilation & Downscaling**

Chair: L. SCHÜLLER

- 09:00 Sequential assimilation of satellite-derived vegetation and soil moisture products using SURFEX\_v8.0: LDAS-Monde assessment over the Euro-Mediterranean area | [C. ALBERGEL](#), [S. MUNIER](#), [D.-J. LEROUX](#), [H. DEWAELE](#), [D. FAIRBAIRN](#), [A. L. BARBU](#), [E. GELATI](#), [W. DORIGO](#), [S. FAROUX](#), [C. MEUREY](#), [P. LEMOIGNE](#), [B. DECHARME](#), [J.-F. MAHFOUF](#), [J.-C. CALVET](#)
- 09:15 Exploiting ASCAT-derived Soil Moisture Products for improving Flash Floods Forecast in Mediterranean Catchments via Data Assimilation | [L. CENCI](#), [P. LAIOLO](#), [S. GABELLANI](#), [L. CAMPO](#), [F. SILVESTRO](#), [F. DELOGU](#), [G. BONI](#), [R. RUDARI](#), [L. PULVIRENTI](#), [G. SQUICCIARINO](#), [N. PIERDICCA](#)
- 09:30 Optimizing bias correction in SMAP soil moisture assimilation | [J. KOLASSA](#), [R. REICHLÉ](#), [Q. LIU](#), [S. H. ALEMOHAMMAD](#), [P. GENTINE](#)
- 09:45 Version 3 of the SMAP Level 4 Soil Moisture Product | [R. REICHLÉ](#), [Q. LIU](#), [J. ARDIZZONE](#), [W. CROW](#), [G. DE LANNOY](#), [J. KOLASSA](#), [J. KIMBALL](#), [R. KOSTER](#)
- 10:00 A review of spatial downscaling of satellite remotely-sensed soil moisture | [J. PENG](#), [A. LOEW](#), [O. MERLIN](#), [N. E. C. VERHOEST](#)
- 10:15 Prediction of satellite soil moisture sub-grid variability based on soil texture information | [K. RÖTZER](#), [C. MONTZKA](#), [H. BOGENA](#), [H. VEREECKEN](#)

**10:30 TO 11:00 | COFFEE BREAK****11:00 TO 12:30 | ORAL SESSION 5: Validation & Intercomparison**

Chair: R. REICHLÉ

- 11:00 Uncertainty assessment of space-borne passive soil moisture retrievals | [J. QUETS](#), [G. DE LANNOY](#), [R. REICHLÉ](#), [M. COSH](#), [R. VAN DER SCHALIE](#), [J.-P. WIGNERON](#)
- 11:15 Impact of Excluding Precipitation Events from Soil Moisture Validation | [A. COLLIANDER](#), [T. JACKSON](#), [M. COSH](#), [T. CALDWELL](#), [A. BERG](#), [H. MCNAIRN](#), [J. MARTINEZ-FERNANDEZ](#), [J. WALKER](#)
- 11:30 The Impact of soil moisture temporal and spatial variability on passive satellite microwave observations over the Desert of Kuwait | [H. ALJASSAR](#), [M. TEMIMI](#), [P. PETROV](#), [D. ENTIKHABI](#), [H. ALSARRAF](#)
- 11:45 Inter-comparison of Operational Global Soil Moisture Products from Satellite Remote Sensing | [Z. WEI](#)
- 12:00 Surface soil moisture spatio-temporal dynamics in southeastern South America observed by SMOS and modeled by ORCHIDEE | [R. RUSCICA](#), [M. SALVIA](#), [J. POLCHER](#), [A. SÖRENSON](#), [M. PILES](#), [H. KARSZENBAUM](#)
- 12:15 On the evaluation of remotely sensed soil moisture - What are (the) errors? | [A. GRUBER](#), [C. ALBERGEL](#), [A. AL-YAARI](#), [B. BARRETT](#), [L. BROCCA](#), [A. COLLIANDER](#), [M. COSH](#), [W. CROW](#), [R. DE JEU](#), [W. DORIGO](#), [S. H. ALEMOHAMMAD](#), [M. HIRSCHI](#), [A. KONINGS](#), [W. LAHOZ](#), [A. LOEW](#), [K. MCCOLL](#), [N. NICOLAISHAW](#), [R. PARINUSSA](#), [C. PRATOLA](#), [S. SENEVIRATNE](#), [C.-H. SU](#), [R. VAN DER SCHALIE](#), [W. WAGNER](#), [S. ZWIEBACK](#)

**12:30 TO 13:30 | LUNCH**

**13:30 TO 15:00 | ORAL SESSION 6: Applications**

**Chair: L. BROCCA & A. COLLIANDER**

- 13:30 WMO Soil Moisture Demonstration Project (SMDP) Status, Plan and Potential Applications | [J. QU](#), [X. HAO](#), [C. XU](#), [R. MOTH](#), [L. GUTENBERG](#), [R. STEFANSKI](#), [J. MALHERBE](#), [M. COSH](#), [WOLFGANG WAGNER](#)
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- 13:45 Improving the accuracy of GPM rainfall estimates over the Tibetan Plateau using SMAP soil moisture product | [H. LU](#), [W. WANG](#), [K. YANG](#), [F. TIAN](#)
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- 14:00 Correcting Systematic Land Surface Modeling Error Using Remotely-Sensed Soil Moisture | [W. CROW](#)
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- 14:15 New opportunities for integrating global precipitation products based on Triple Collocation Analysis | [C. MASSARI](#), [W. CROW](#), [L. BROCCA](#), [T. PELLARIN](#), [C. ROMÁN-CASCÓN](#), [Y. KERR](#), [D. FERNÁNDEZ PRIETO](#)
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- 14:30 Mapping surface heat fluxes by assimilating SMAP soil moisture and GOES land surface temperature data | [Y. LU](#), [S. STEELE-DUNNE](#), [N. van de GIESEN](#)
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- 14:45 Assessment of irrigation water from satellite soil moisture data: is it feasible? | [L. BROCCA](#), [A. TARPANELLI](#), [P. FILIPPUCCI](#), [L. CIABATTA](#), [C. MASSARI](#), [S. CAMICI](#), [E. JALILVAND](#), [S. GHAZI ZADEH HASHEMI](#), [D. FERNÁNDEZ PRIETO](#)

**15:00 TO 15:30 | COFFEE BREAK**

**15:30 TO 16:45 | DISCUSSION SESSION**

**Chair: T. JACKSON**

- 15:30 Topic 1: Is there a Need for Updating the GCOS accuracy requirements?  
**Moderator:** [W. WAGNER](#)
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- 16:00 Topic 2: Recommendations for L-Band Follow-On Missions  
**Moderator:** [S. MECKLENBURG](#)
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- 16:30 Workshop Conclusions and Recommendations  
**Moderator:** [W. WAGNER](#) & [T. JACKSON](#)

**16:45 TO 17:00 | END OF WORKSHOP & ANNOUNCEMENT SMW 2018**

**W. WAGNER & J. QU**



If your name tag contains the “Donauturm - Icon” you are registered for the conference dinner on 19.09.2017 | 18:30 at Donauturm.

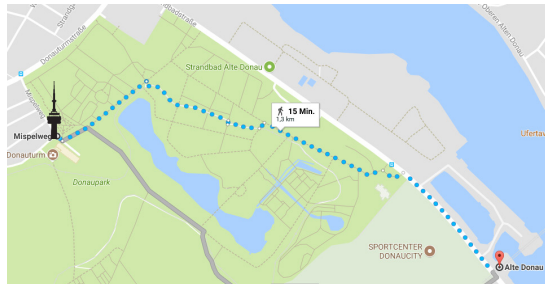
Directions from TU Wien to Donauturm:

duration: ~ 30min

> After leaving the TU Building go left for a few meters and then follow the Favoritenstraße for about 200m until you get to the Metro-Station U1 “Taubstummengasse”.

> Take the U1 direction “Leopoldau” and get off the Station “Alte Donau”.

You might already see the Donauturm in the park in front of you. If you'd like to **walk** through the park it will take you approx. 15min to get to the tower.



> You can also take the bus from the metro station “Alte Donau” to Donauturm:

- On the left hand of the Metro Station there's a bus stop (20A). Get on the bus direction “Neue Donau” and get off at the fourth stop called “Wildbadgasse”.

- Follow the Wildbadgasse for about 300m then turn left on Walkergasse. Cross the Donauturmstraße and walk straight ahead on the Mispelweg and you will directly end up at the entrance of Donauturm.

