

German Winter Service Standards



WINTER SERVICE ON ROADS
AND OTHER PUBLIC PLACES



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German Road Administration
PIARC-Seminar Winter Service on Roads and other Public Places
International Seminar in Ukraine
16.12.2021



Germany

356.700 km² base area

83 Mio. Inhabitants

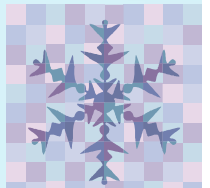
13.000 km Motorways
(„Autobahn“)

220.000 km Rural Roads

415.000 km Urban Roads

High traffic density
Much transit traffic

Different climatic areas
Flat areas ... alpine region





Germany

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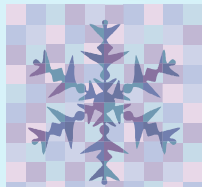
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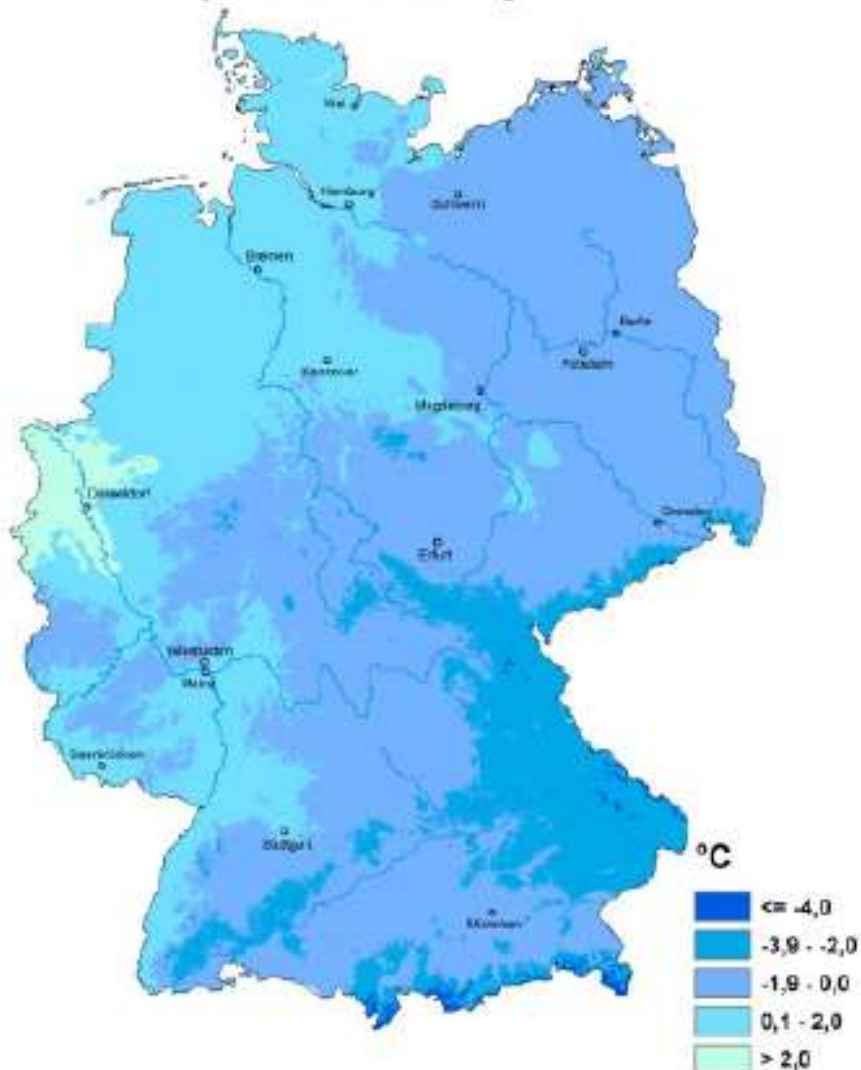
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Climate (30 year medium)

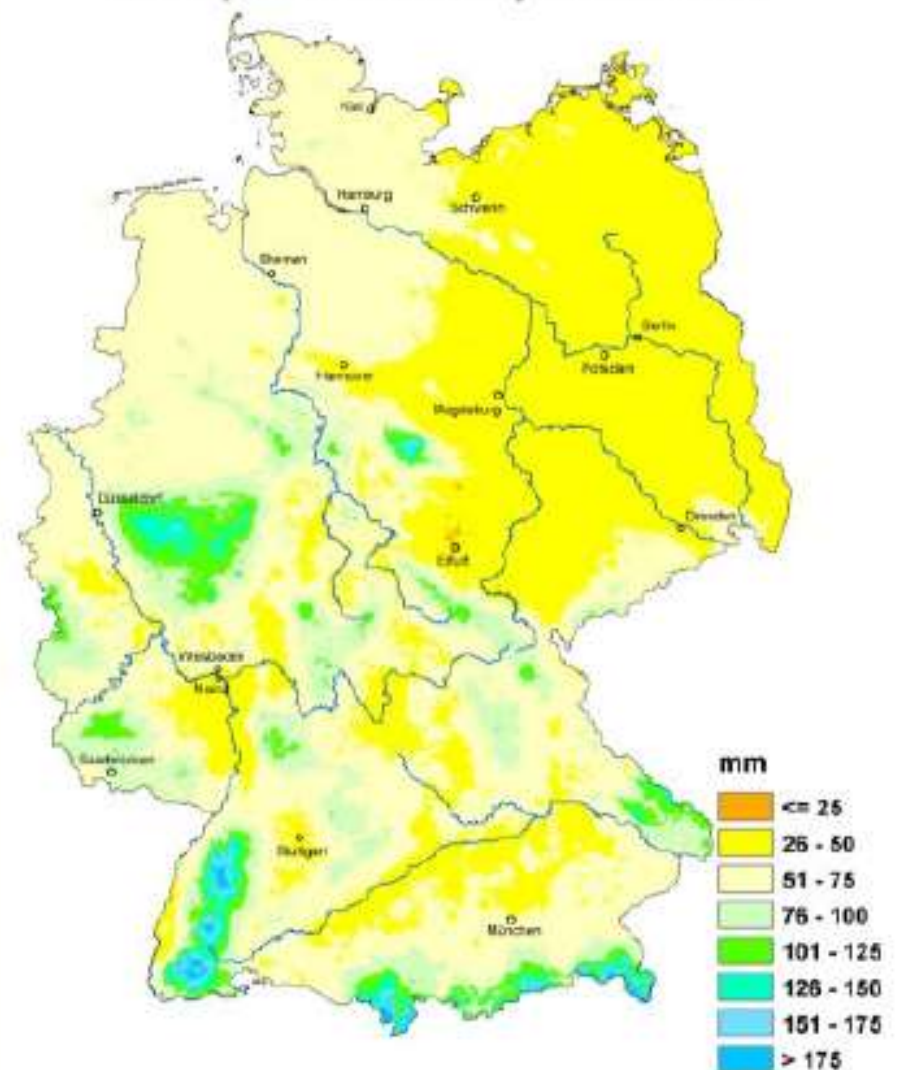
Lufttemperatur Januar 1961 - 1990
Temperature January 1961 - 1990



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Diese Karte wurde am 21.05.2008 mit den Daten aller Stationen aus dem Messnetz des DWD erstellt.
This chart was produced on May 21, 2008 using data of all stations of the network of DWD.

Niederschlagshöhe Januar 1961 - 1990
Precipitation January 1961 - 1990



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Organization (medium numbers)

❖ Motorways

Federal Motorway Company (since 2021)

Maintenance Centers 80 km
 30 persons
 8 trucks

❖ Rural Roads

Common service by the 16 German States
for federal roads, state roads and county roads

Maintenance Centers 300 km
 25 persons
 6 own trucks
 4 rented trucks

❖ Urban Roads

Service by the cities
different organisations
mostly own trucks

New Guidelines in 2020



**New Federal Guideline for
Winter Road Maintenance**



**New Recommendations for
Winter Maintenance for
Bicycles (German Cities)**

Winter Maintenance Standards

❖ Level of Service

	Operation Time	circulation period
• Motorways	24 hours daily	
	Spreading Service time	2 hours
	Snow Removal	3 hours
• Rural Roads	6 - 22 h	
	Service time	3 hours
• Urban Roads	6 - 22 h	(3 hours)

Circulation time includes reload of the trucks

Use of Spreading Agents

- ❖ Motorways
 - Rural Roads
 - Main Urban Road Network
 - Dangerous Points→ Salt Spreading
- Subordinate Roads
 - Gritting is no more recommended on roadsno spreading, only removal (no gritting)
- ❖ Bicycle paths and areas → Salt Spreading
- ❖ Pedestrian Crossings → Salt Spreading
- ❖ Pedestrian paths and areas
 - at steep grades/stairs,
 - black ice and hoarfrostmostly gritting
salt spreading

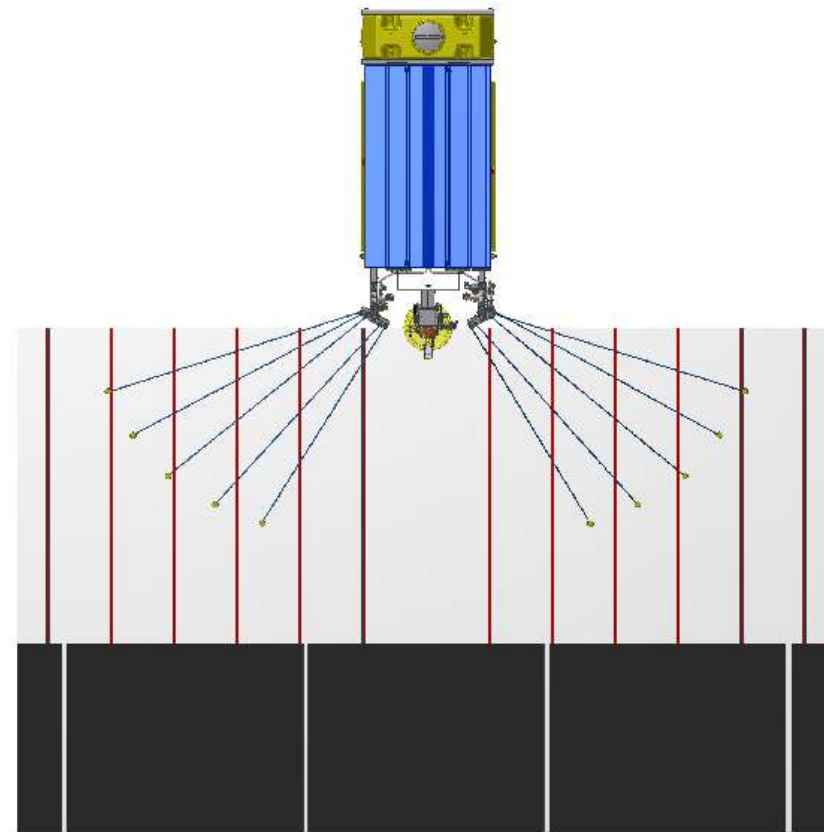
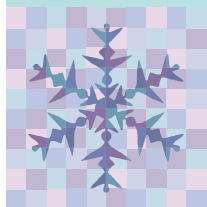


Spreading Techniques

- ❖ Dry Salt is no more recommended on roads or bicycle paths [too high spreading dosages, high loss of salt, preventive spreading is not possible]
 - ❖ Standard is pre-wetted salt (FS 30)
 - ❖ For preventive actions
thin ice
temperatures down to -6°C → Salt Brine (FS 100)
- Maintenance Operators must have spreaders for pre-wetting and for brine
- swap body
 - combined spreader
 - spreader with special disc for both techniques









Winterdienst

M AN 7220

Winterdiensttechnik
Verkehrssicherheits-Systeme
7715 Bräunlingen / Germany
Telefon 0771 / 601-0



Preventive Spreading



Preventive Spreading

- ❖ The new guidelines recommend preventive spreading in all cases when icy roads can be expected with high probability
 - hoarfrost
 - black ice
 - freezing rain
- ❖ Advantages of preventive spreading
 - legal obligation (by German jurisprudence)
 - high savings of salt (approximately 50 %) and costs
 - reduction of accidents
 - more safety for own personal
 - better traffic flow
 - reduction of control actions



Recommendations of the new Guidelines

Expected Surface Condition	Recommended Winter Maintenance Action	Recommended Spreading Density ***
Hoarfrost	Preventive Spreading** - preferential Liquid Spreading* - otherwise Pre-Wetted Salt	10 – 15 ml/m ² 5 – 15 g/m ²
Light Black Ice (freezing moisture)	Preventive Spreading** - preferential Liquid Spreading* - otherwise Pre-Wetted Salt	10 – 25 ml/m ² 5 – 30 g/m ²
Black Ice (freezing wetness)	Preventive Spreading** - Pre-Wetted Salt or Liquid Spreading*	15 – 40 g/m ² (20 – 50 ml/m ²)
Freezing Rain (black ice)	If possible Preventive Spreading** - preferential Liquid Spreading* - otherwise Pre-Wetted Salt	40 – 60 ml/m ² 30 – 40 g/m ²
Snow Fall (packed snow)	1. Where possible Preventive Spreading with Liquid Spreading* or Pre-Wetted Salt 2. During Snow Fall Snow Removal and Spreading of Pre-Wetted Salt with low spreading density 3. After Snow Fall aggressive Removal of Snow and Spreading with Pre-Wetted Salt	15 – 30 ml/m ² (10 – 20 g/m ²) 10 – 15 g/m ² 20 – 40 g/m ²
	* Liquid Spreading only at temperatures above -6°C, at lower temperatures only Pre-Wetted Salt **if preventive salting was not possible, existing slipperiness must be eliminated with Pre-Wetted Salt with double spreading density	***low values for temperatures tight below 0°C, higher values for lower temperatures

Recommendations for Bicycle Paths

- ❖ Winter Maintenance on the main bicycle network (for work, shopping, Schools, Universities)
- ❖ Effective snow removal by sweeping (→ „black removal“) with extra equipment for the bicycle network
- ❖ Spreading of salt brine with minimum dosages



FIS-3738

Winterdienst

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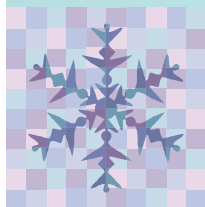
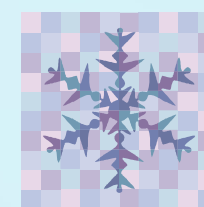
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VIRTUS MINI



Requirements for the New Strategy

- ❖ Modern Spreading Techniques: FS 30 + FS 100
Brine Produce Stations
- ❖ Good and detailed Road Weather Information Systems
- ❖ Good Training of Winter Maintenance Staff
Basics or ice buidling, Winter Maintenance Strategies,
Assessment of the weather situation,
right operation time, thawing operation of salt,
optimal spreading dosages
→ also practical trainings (Plowing, salt thawing)
- ❖ Change of Winter Maintenance Organisation
more preventive spreading
spreading at other times than before (f.e. afternoon)
early and intensve snow removal
inspection trips only in exceptional cases



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