

MR2805746 (2012g:18012) 18F15 58A05
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Comparative smootheology. (English summary)
Theory Appl. Categ. **25** (2011), No. 4, 64–117.

It is well known that the category of smooth manifolds and smooth mappings is not good enough. By way of example, it is not Cartesian closed. More than a few geometers have proposed convenient categories for smootheology or diffeology, say, K. T. Chen [*Ann. of Math. (2)* **97** (1973), 217–246; [MR0380859](#); *Trans. Amer. Math. Soc.* **206** (1975), 83–98; [MR0377960](#); *Bull. Amer. Math. Soc.* **83** (1977), no. 5, 831–879; [MR0454968](#)], A. Frölicher [in *Category theory (Gummersbach, 1981)*, 69–81, *Lecture Notes in Math.*, 962, Springer, Berlin, 1982; [MR0682945](#); *Cah. Topol. Géom. Différ. Catég.* **45** (2004), no. 4, 267–286; [MR2108194](#)], Frölicher and A. Kriegl [*Linear spaces and differentiation theory*, *Pure Appl. Math. (N. Y.)*, Wiley, Chichester, 1988; [MR0961256](#)], R. Sikorski [*Colloq. Math.* **24** (1971/72), 45–79; [MR0482794](#)], J. W. Smith [*Tôhoku Math. J. (2)* **18** (1966), 115–137; [MR0202154](#)], Y. H. Clifton and Smith [*Trans. Amer. Math. Soc.* **105** (1962), 436–452; [MR0145524](#)], J.-M. Souriau [in *Differential geometrical methods in mathematical physics (Proc. Conf., Aix-en-Provence/Salamanca, 1979)*, 91–128, *Lecture Notes in Math.*, 836, Springer, Berlin, 1980; [MR0607688](#)] and others. This paper tries to study the relationship among various proposed convenient categories. The author thoroughly investigates various functors and adjunctions among these categories.

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Note: This list reflects references listed in the original paper as accurately as possible with no attempt to correct errors.